

THE AFRICAN AMERICAN GENDER GAP:  
WHAT ACCOUNTS FOR THE COLLEGE ENROLLMENT DIFFERENTIAL  
BETWEEN AFRICAN AMERICAN MEN AND WOMEN?

A Senior Honors Thesis for the Department of Economics

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Tufts University, 2004

## **I. Introduction**

Historically the educational attainment of men has been consistently higher than that of women. For many decades substantial institutional and social barriers prevented women in the United States from pursuing higher education, creating this large disparity between the average education levels of men and women. Even with the removal of institutional barriers and the admission of female students into the nation's colleges and universities, certain social barriers may have continued to discourage women from choosing higher education as a life investment. Traditional social conditioning often led young girls to develop expectations that did not view higher education as a priority for achieving career goals, mainly because such expectations revolved around domestic work or traditionally female-held occupations. Such social conditioning could be seen as early as elementary and secondary school, where students may have been conditioned to think that boys were good at math and science, while girls were more creative and had stronger verbal and writing skills. In such a gender-biased academic environment the educational achievement of girls was somewhat stifled, creating a learning environment that tended to favor males over females.

However during the past three decades there has been a dramatic change in the academic environment that existed in the past. From elementary school up through graduate school, females have been excelling at an increasing rate, leaving their fellow male classmates in the dust. At the elementary school level girls are closing the gap in achievement test scores in mathematics, while consistently outperforming boys in reading. In the classroom girls are overshadowing their male classmates as well. Of the students of this age group diagnosed with learning disabilities, 73% are male, indicating

that male students are disproportionately represented in special education classes (BusinessWeek, May 2003). Furthermore, boys in elementary school are more likely to be retained in a grade, receive lower grades, be present in remedial classes, and exhibit some type of disciplinary problem (Jacob, 2002).

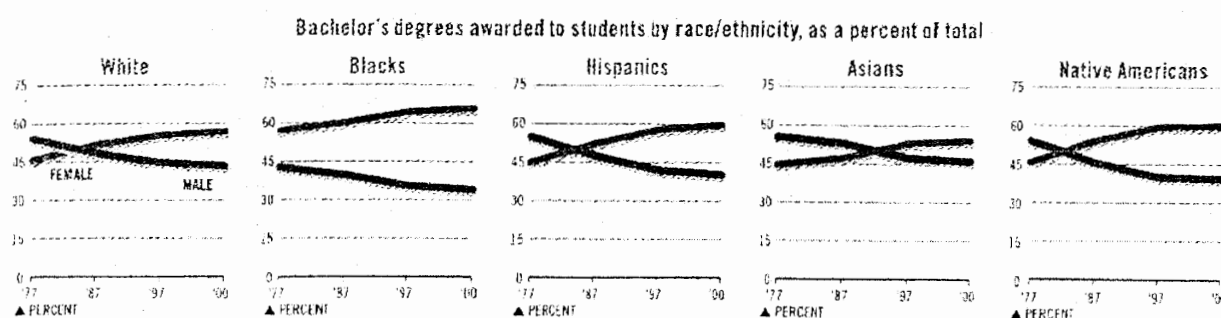
Naturally such behavior continues well into the secondary level. While the high school dropout rate has decreased dramatically over the past few decades for both males and females, female students continue to exhibit very high levels of academic achievement. In addition to receiving higher grades, female high school students have been observed dominating all extracurricular activities, with the exception of athletic-related activities (BusinessWeek, May 2003). These two measures of achievement, grades and participation in extracurricular activities, are factors that play a significant role in college attendance, considering college admission offices consider these two credentials very highly when selecting applicants.

These gender differences that are apparent early on in the academic environment may explain the recent trends observed in higher education. Compared to past generations the number of males and females attending college has increased. However, in the past three decades the college entry rate of males has slowed down substantially, while the college entry rate of females has continued at an increasing rate. In 1970 the composition of college campuses was predominantly male, with men earning the majority of bachelor's degrees. Now women earn 57% of all bachelor's degrees, and continue to earn the majority of degrees at both the graduate and doctoral level. Women now earn 58% of all master's degrees, and with the exception of fields like engineering and computer science, women are also earning the majority of the PhDs awarded at the

doctoral level. It is important to note that these trends are not specific to any single race, level of income, or regional location, and that on average these are trends affecting the entire country. Furthermore it has also been found that such trends can be observed in many other industrialized Western nations, such as Canada, France, and Spain, indicating that this recent phenomenon extends beyond the borders of the United States (BusinessWeek, May 2003)-.

As it was mentioned earlier the observed trends in higher education were not specific to any single race, and these general trends can be observed among all racial groups. Among Caucasians, African Americans, Hispanics, Asians, and Native Americans, the college attendance of women has increased dramatically since the 1970s, while that of men has slowed down, and even declined in some cases. However, while the trends specific to each racial group do run consistent with the general trends, this observed gender gap in higher education is more pronounced among certain racial groups compared to others. Figure 1 below compares the gender differences in higher education by race. While the proportion of men earning bachelor's degrees has declined for all racial groups, for African American men the decline is much more dramatic. At the same time the proportion of women earning bachelor's degrees has increased for all racial groups, but again the increase is much more dramatic for African American women compared to the other groups, suggesting that perhaps the women of this racial group are driving the general trends observed. At the same time African American men may be the driving force responsible for the decline in college attendance among the general male population. The general gender gap in higher education is in itself an interesting phenomenon, which more recent studies have attempted to explain. However, the fact

that the gender gap is much more pronounced among African Americans than any other racial group may suggest that separate examination is needed to truly understand what is making the trends so much more visible among African Americans. Therefore it is the objective of this paper to focus specifically on this group, in order to provide some insight into factors playing a role in trends affecting African Americans.



During the past three decades African Americans have made substantial academic progress. Despite the numerous institutional obstacles, African Americans have made sizeable educational gains in more recent decades, as they continue to have an increasing presence at the nation's most prestigious, predominantly white universities, and earn degrees from historically black colleges that have continued to thrive since the late 19<sup>th</sup> century. While such progress is notable, it does not paint the entire picture, which if looked at in the larger context, does not look so promising. Starting from the second half of the 20<sup>th</sup> century African American men have been experiencing a sharp decline in higher education participation rates, while the rate for African American women continues to increase, as seen in Figure 1.

In 1970 the numbers of male and female African American college students were nearly equal, with only 6% more African American men than women enrolled in some

type of institution of higher education (Cose, 2003). However as early as 1976 the trends reversed, with African American men earning only 42.9% of all college degrees awarded to African Americans, and from this point on the trends continued to move in this direction, with African American female enrollment increasing, and African American male enrollment decreasing. From 1976 to 1997 the percentage of African American males who earned a bachelor's degree dropped from 42.9% to 35.6%, while African American women increased their degree attainment to nearly 70%. In 2000 a reported 1,739,000 African American women held a college degree, compared to only 1,236,000 African American men (Cross et. al., 2000).

Starting from the late 1970s the number of African American women earning bachelor's degrees steadily began to increase, surpassing their male counterparts at both historically black and white colleges. However to look solely at the bachelor degree level to assess overall academic achievement would be limiting, therefore it is important to also look at master, professional, and Ph.D. levels as well to extensively examine the education gap. It turns out that starting in the late 1970s the growing gender gap was also reflected in advanced degrees. In 1997 African American men only earned 31.3% of all master's degrees awarded to African Americans. In 2000 454,000 African American women held a master's degree, which was more than double the number of similarly educated African American men. The fact that a large proportion of women (both African American and Caucasian) pursue careers in education at the elementary and secondary level attributes for at least a portion of the gap, because these fields require master degree studies (Cross et. al., 2000). However this factor cannot possibly explain the entire gap considering the fact that the gender gap among African Americans is much

larger than it is among Caucasians. Therefore there must be other factors that play a role in the gender gap among African Americans. These will be explored later in the paper.

At the professional degree level African American men tend to perform slightly better than at other degree levels, however their female counterparts still outperform them. In 1997 African American men earned 41.5% of all professional degrees awarded to African Americans (Cross et. al., 2000). However it is important to note that in 1976 African American men earned almost 75% of all professional degrees awarded to African Americans, and while the steady increase in the number of African American women reflected a positive change towards gender equality, the sharp decline in the proportion of African American men earning such degrees reflected a devastating trend that would *continue for many years. Similar to the professional degree level, the proportion of African American men who earned doctorates fell dramatically from 1977 to 1998, from more than 60% to only 35.4%. In 1976 African American women earned 40.4% of all doctorates, and by 1995 earned 62.5% (nearly 2/3) of all doctorates awarded to African Americans.*

It is important to note the difference between college enrollment and college completion. The statistics that have been cited represent actual college completion, however this paper will actually focus on enrollment rates. Although college completion will not be explicitly examined in this paper, using degree attainment statistics is helpful when looking at the trends being observed today in order to recognize the dramatic change in the academic environment. So then why does this paper look at college enrollment and not college completion? It could be argued that looking at enrollment statistics is somewhat limiting, considering that not everyone who enrolls in college

remains in college and earns a degree. And considering that in order to enhance one's earning potential and employment opportunities an actual degree is necessary, perhaps college completion would be a more logical focus of study. However, the objective of this paper is to examine what factors play a role in male and female adolescents' decision-making process, which generally occurs during their high school years. Therefore looking at college enrollment rates is sufficient enough to determine what causes an individual to decide to go to college or forgo college.

Factors that may cause an individual to remain in college or drop out of college may be completely distinct from those that determine initial enrollment, and are not of primary concern for this paper's purposes. Furthermore it is possible that the actual gender gap in degree attainment is the result of the fact that more women than men are initially enrolling in college compared to men, as opposed to the idea that an equal number of men and women enroll, but then for some reason women are more likely to remain for all four years and earn a degree. In fact previous work suggests that a difference in college persistence is not the main cause of the gender gap in higher education, particularly for African Americans. Constantine and Perna (2000), who also examine the gender gap among African Americans in terms of college enrollment as opposed to college completion, mention that CPS and longitudinal data do not reveal that African American men are less likely to persist in college once they are enrolled compared to African American women. This paper will work from a similar assumption, and therefore the remainder of this paper will focus primarily on college enrollment rates to measure the educational status of African American males and females.

As mentioned earlier, the trends in higher education have been changing within the past three decades, and most of the documented research and statistics related to this topic have examined the changes starting from 1970 to 1990 (more recent work has gone all the way up to 2000). What is so interesting about this time period is that another phenomenon was occurring in conjunction with the growing gender gap. Over the same two-decade period crime and incarceration have increased dramatically. From the 1970s to mid-1990s the number of men in prison in the United States tripled, so that in 1993 there was one man incarcerated for every fifty men in the labor force. The ratio of incarcerated men to men in the labor force is even greater among African American men. In 1993 there was one African American man in prison for every eleven African American men in the labor force. In addition to this, in 1993 there was one African American man under the supervision of the criminal justice system for every three to four African American men in the labor force (Freeman, 1996).<sup>1</sup>

The female prison population has also grown over the past couple decades as well, making up 8% of the jail inmates in 1985 and then 10.8% of the inmates in 1996, however comparatively the female prison population is very small (U.S. Department of Justice). Due to the fact that the proportion of men in jail has increased so intensely, it is male incarceration and criminal participation that have been of major concern for research conducted in all fields of study. Given the numerous economic and social consequences such a phenomenon can generate within a society, researchers from

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<sup>1</sup> It is important to note that the relatively large proportion of African American men incarcerated or under legal supervision does not necessarily mean that African American men are that much more likely to commit crimes. The discrepancy between the proportion of Caucasian men and the proportion of African American men incarcerated may reflect certain biases within the criminal justice system, which may have the tendency to target African American men specifically. Therefore incarceration rates could potentially overestimate the proportion of African American men committing crime relative to Caucasian men.

economics, to political science, to sociology, have been examining these devastating trends, in order to provide some explanation for what is occurring in today's society.

As 2004 approaches these trends continue to move in this direction. African American women are dominating at almost all levels of education, while African American men are substantially falling behind in terms of education. At the same time increasingly large numbers of African American men are either participating in crime or incarcerated. It may not be coincidental that these two trends have been occurring at the same time. Nor is it a coincidence that both trends are significantly more pronounced among African Americans relative to all other racial groups. Consequently this paper suggests that there may be a significant relationship between the two phenomena. However to understand how crime and college enrollment are related it is first necessary to review the existing literature related to these topics.

## **II. Literature Review**

This paper will focus on the relationship between crime and college enrollment, and intends to provide substantial empirical evidence supporting the hypothesis that crime is one of the main determinants driving the gender enrollment differential between African American men and women. While there is very little literature explicitly dealing with the relationship between crime and higher education, there is a substantial amount of literature that covers each topic individually. In order to develop a basic framework that links the two topics, it is first necessary to separately review previously written literature on crime and higher education. By doing so it will be possible to uncover any underlying factors that may play a role in determining both crime and college enrollment rates, which will help in the establishment of a theoretical framework that then explicitly links

them together. Therefore, this paper will review previous literature in two separate sections. The first section will discuss literature focusing on higher education, and the second section will discuss literature focusing on crime.

#### *A. Literature on Higher Education*

There is extensive literature that discusses higher education, recent changes in observed participation rates, and the factors that may influence these observed trends. However previous literature concerning higher education does not provide substantial discussion of or explanation for the recent trends observed among African Americans. Although this literature gap does exist, previous work that has focused on general higher education participation provides an excellent framework from which to approach the educational attainment gap observed between African American men and women. This framework is best presented categorically as opposed to chronologically, in order to better recognize in what context each piece of literature discusses higher education, and also to identify how one study is conceptually related to or distinct from the next. I therefore will divide the literature focusing on higher education in three different subsections, based on the general themes of the topics discussed by various authors.

The first subsection will present works that have specifically focused on higher education participation in the context of race and/or ethnicity. The literature reviewed specifically focuses on the educational attainment differentials between African Americans and Caucasian Americans. The second subsection will examine works that look at higher education participation in the context of gender. This literature examines the observed trends in educational attainment among men and women without focusing

on any specific race or ethnicity. Literature presented in the third subsection focuses on educational trends that are specific to African Americans. This categorical presentation of the literature review should not only reveal the similarities that exist in the literature, but also more explicitly highlight the gap in the literature on higher education that this paper will address.

Historically, the educational attainment level among African Americans has been substantially lower relative to that of Caucasian Americans. While this educational disparity between the two racial groups continues to exist, African Americans have made sizeable gains in higher education since the 1970s, helping to shrink the racial gap. Nevertheless, these gains have been unable to mask the fact that African Americans continue to be less educated than their Caucasian counterparts, which hinders progression towards racial equality from both an economic and a social standpoint. Consequently, this longstanding educational gap has been examined extensively in many studies.

Black and Sufi (2002) approach the college enrollment differential between African Americans and Caucasian Americans by examining the role of college costs and family background characteristics such as family income, family size, and the level of parental education in the college decision-making process. Black and Sufi (2002) focus primarily on these factors due to the fact that other research has indicated that after controlling for family background characteristics, African Americans were more likely to enroll in college than equivalent Caucasian Americans during the 1970s and 1980s. Furthermore, some research indicates that African Americans at the lower end of the socio-economic status (SES) spectrum were driving this trend at the time. These findings suggest that two important determinants of college enrollment among African Americans

are the cost of higher education and the family background characteristics indirectly related to such costs, rather than some other observable characteristic differential between African Americans and Caucasian Americans. Although both factors do play some role in the college enrollment patterns of African Americans in general, which will be discussed further when looking at the work of Kane (1994), Black and Sufi (2002) suggest that family background characteristics can account for the majority of the gap between African American and Caucasian American college entry, because such characteristics affect how individuals respond to local labor market conditions. Furthermore Black and Sufi (2002) suggest that while African Americans and individuals at the low end of the SES spectrum are more likely to be negatively affected by rising tuition costs, these costs cannot account for a large part of the racial gap in college enrollment, particularly when examining time-series data.

Kodrzycki (2003) adds to the literature on higher education by examining the educational attainment gap between African Americans and White Americans from a regional standpoint. This study focuses on actual college completion, as opposed to college enrollment, to determine the educational level of individuals in different regions of the United States. Overall, throughout the United State there is a smaller proportion of African Americans who have completed four years of college compared to Caucasian Americans. However the educational attainment differential varies across geographic regions, and is particularly high in the Northeast, an area considered to have high average educational attainment. In contrast, the East South Central area had the smallest college completion differential between African Americans and White Americans.

Like Black and Sufi (2002), Kodrzycki examines the role of family background characteristics as a factor that may help explain this regional enrollment differential. One family background characteristic that Kodrzycki emphasizes is maternal education. According to some research (Turner 2002), an individual's degree attainment is influenced heavily by the mother's educational level. Therefore if an individual's mother completed college, then that individual is more likely to also complete college. If this were the case then one would expect for the disparity between the education levels of Caucasian American mothers and African American mothers to be higher in the regions with high race differentials. Kodrzycki's findings surrounding maternal educational differences were consistent with general college completion differentials between African Americans and Caucasian Americans. New England and the Middle Atlantic states had the highest educational attainment differences between Caucasian American and African American mothers, while the East South Central region had the smallest attainment difference.

Although the research of Black and Sufi (2002) and Kodrzycki (2003) provides some insight into the general college decision-making process by outlining some key determinants of college enrollment, their findings are not particularly helpful in deriving explanations for the trends observed among African Americans. Factors such as college costs and family background characteristics may have a tremendous impact on enrollment differentials based on race. However it is difficult to explain the enrollment differential between African American men and women using these factors considering the fact that African American men and women presumably come from the same types of families. Therefore these factors would not disproportionately affect one gender or the

other. Furthermore, there may also exist regional differences in the level of education attained by African American men and women, which Kodrzycki fails to address in her research. The educational attainment gap between Caucasian Americans and African Americans tends to be lower in the East South Central states, which Kodrzycki mentions could be the result of the number of Historically Black Colleges and Universities (HBCUs) that are contributing to the increase in the education of African Americans. However, Kodrzycki does not mention that within these institutions there is a recognizable gender differential, which suggests that even in regions where African Americans are highly educated, there still may exist a gender enrollment gap. Along with the relationship between crime and college enrollment, this paper will also address the gender enrollment differential among African Americans from a regional standpoint.

The educational attainment differential between African Americans and Caucasian Americans has received substantial examination over the years due to its history as an ongoing trend in the United States. However, the gender differential in educational attainment is a relatively new area in which research on higher education is beginning to explore. During the 1970s there was a surge of women entering institutions of higher education, bringing male-female enrollment ratios closer to par. After the 1970s women continued to pursue higher education, and recent trends reveal that this enrollment behavior has now shifted the gender enrollment ratio, with women now comprising the majority of students on college campuses across the United States. Due to this recent change in higher education enrollment rates, which continue to favor women over men, there is substantial literature that attempts to explain these observed trends.

Charles and Luoh (2002) examine college completion among birth cohorts starting from 1940 to compare the educational attainment between men and women. Their research reveals that since the 1953 birth year cohort, women have consistently been more educated than men. Using a standard human capital model, Charles and Luoh (2002) attempt to explain what accounts for the reversal of trends in education attainment. Standard human capital models focus on a cost-benefit analysis as a framework for determining the factors involved in the enrollment decision-making process. The costs associated with such a model are the direct costs (tuition and net financial aid), the opportunity cost (forgone earnings associated with employment), and psychic costs (the stress associated with adjusting to college life).

Much of the literature focusing on higher education uses standard human capital models to approach the college enrollment decision-making process. Charles and Luoh (2002) add to the literature by taking a slightly different approach and building on the standard models. They argue that the college premium alone cannot explain the growing gender gap in higher education. However viewing the college decision-making process as an investment decision between two uncertain investments, going to college and not going to college, may better explain why women have been more educated than men since the 1953 birth cohort.

According to Charles and Luoh (2002) the uncertainty or risk associated with each option is not only captured in the anticipated college premium, but also in the anticipated dispersion of log earnings of individuals without a college education and that of individuals with a college education. Their research reveals that the uncertainty associated with each option has evolved differently over time for men and women. For

men the uncertainty associated with both options rose between the 1945 and 1972 birth cohorts, with the uncertainty of the “college” option rising more dramatically than the “no college” option. However for women the uncertainty associated with going to college decreased, while the uncertainty of not going to college for the 1945 through 1957 birth decreased, but then showed a flattening or slightly increasing behavior thereafter.<sup>2</sup> These results imply that over time women have become less and less uncertain about the returns and earnings inequality associated with college education compared to no college education, whereas men have continued to associate an increasing level of uncertainty with both options.

Charles and Luoh (2002) attribute the growing gender gap in higher education to the fact that men and women may place differing values on college education as an investment, given their individual assessments of the costs versus the uncertain dispersion of benefits associated with going or not going to college. These assessments essentially focus on the direct and opportunity costs laid out in the human capital framework. However the hypothesis proposed by Charles and Luoh (2002) does not explicitly explain how psychic costs factor into the college decision-making process. Jacob (2002) on the other hand adds to the literature by focusing specifically on the role of psychic costs in the gender gap in higher education.

Like Charles and Luoh (2002) Jacob uses a standard human capital framework to address the recent gender gap, and recognizes the role of the college premium as a possible explanation for the gender gap, suggesting that women observe higher returns to

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<sup>2</sup> Whether the pattern was flattening or increasing depended on the measure. For women in the 90<sup>th</sup>-10<sup>th</sup> percentile the pattern of uncertainty associated with not going to college exhibited a flattening behavior. For women in the 80<sup>th</sup>-20<sup>th</sup> percentile the level of uncertainty associated with not going to college increased.

college than men. However Jacob (2002) also emphasizes the importance of psychic costs, and in his model of college attendance assumes that the psychic costs of college depend on a student's non-cognitive skills. Non-cognitive skills include the ability to be attentive in class, take efficient notes, organize homework assignments, work well in groups, avoid disciplinary problems, etc. Low non-cognitive skills may indirectly diminish the likelihood of college enrollment by leading to poor performance in high school, making it more difficult to be accepted to college. However low non-cognitive skills also have a direct negative impact on college attendance, because the lower a student's non-cognitive skills, the higher that student's psychic costs associated with attending college. In his research Jacob observes eighth graders in 1988 that were then surveyed every two years until 1994. The survey results reveal that while boys and girls share similar levels of cognitive skills, girls exhibit stronger non-cognitive skills. Jacob finds this non-cognitive skill differential between males and females to be so significant that, combined with the higher returns to college observed by women, these two factors can account for nearly 80% of the gender gap in higher education.<sup>3</sup>

In beginning his discussion of the gender enrollment differential, Jacob (2002) specifically criticizes the argument that the large number of men in jail and in the military may explain the growing gender gap. Using Census data from 1990, Jacob (2002) suggests that even if all of the young adult males in the military or in prison attended college instead, there would still be an enrollment differential of three 3 percentage points. Although this may be true, this paper contends that while the actual male prison population may not be a significant factor causing a gender gap in college enrollment, the

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<sup>3</sup> Jacob (2002) observed the differential in non-cognitive skills for several types of non-cognitive skills, including grade retention and disciplinary problems. Jacob (2002) found that there was a male-female

fact that more and more young adult men are involved in criminal activity each year is a phenomenon that should be examined more closely as a potential factor contributing to the gender enrollment differential. Furthermore, considering the disproportionate number of African American men involved in criminal activity, this is an issue that should not be overlooked when examining the enrollment differential of African Americans specifically, and for this reason crime is a topic of primary concern in this paper.

Much of the literature focusing on the gender gap in higher education fails to differentiate between races, and addresses the observed trends in higher education from a general standpoint. However, the generalized hypotheses generated from such studies may not be useful upon examination of the gender gap across races. Unfortunately there is a dearth of literature that specifically addresses the African American gender gap. The literature that focuses solely on African Americans generally tends to address the academic progress and performance of African Americans over time, without distinguishing between genders. While such literature may not explicitly address the gender gap, it is still useful to review this literature in order to have a general understanding of the educational attainment patterns of African Americans from the late twentieth century to the present. Kane (1994) observes college entry by African Americans between 1973 and 1988, and examines how college costs, family background, and the college premium have influenced higher education attainment among African Americans. Although these factors are the same determinants examined by literature that compares the college entry rates of African Americans and Caucasian Americans, the work of Kane is included in this section focusing solely on African Americans because

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differential of 6 and 20 percentage points for grade retention and disciplinary problems respectively.

his intent is not to compare the two racial groups, but rather to provide some explanations for the general changes in college enrollment of African Americans over time.

According to Kane (1994) there were three noticeable turning points in the college entry levels among African Americans. Between 1973 and 1976 there was an increase in college enrollment, a decline during the early 1980s, and then another increase starting in 1985. His study suggests that college costs, family background, and the returns to education were the main factors influencing college entry, and that each variable can in some way account for the turning points observed.

To examine the role of college costs Kane (1994) not only takes into account changes in tuition as a possible factor influencing college entry among African Americans, but also looks closely at changes in financial aid availability as a determinant of college entry. According to Kane (1994) the net direct cost of college decreased substantially between 1973 and 1975 with the establishment of the federal Pell grant program, coinciding with the initial increase in college entry by African Americans. However during the beginning of the 1980s college tuitions increased at a faster rate than increases in the Pell grant maxima, yielding an increase in net direct cost of college. According to Kane (1994) this increase in net direct cost of college was the main force driving the college enrollment of African Americans downward during the beginning of the 1980s. Considering that the net direct cost of college continued to increase throughout the 1980s, there must have been some other determinant working in the opposite direction to lead to a resurgence of college entry by African Americans during the late 1980s.

Like much of the literature examining college enrollment differentials between Africans Americans and White Americans, Kane (1994) considers family background characteristics to be extremely important in determining college enrollment. Much of the literature focusing on the college enrollment differential between African Americans and White Americans tends to attribute the differential to differences in family background characteristics such as parental education, suggesting that parents of African American students tend to be less educated than parents of White American students. However while parental education is lower for African Americans than for White Americans, Kane's (1994) study reveals that during the 1980s parental education increased for African Americans, driving the resurgence of college entry that was large enough to offset the effects of rising college tuition.

During the same time period the college premium rose for both African American and White American women, which is consistent with the findings of Jacob (2002), who suggests that a higher college premium for women attributes to at least a portion of the gender gap. In contrast however, Kane (1994) does not find the college premium to be a determinant of college enrollment for African Americans. According to his study African Americans did not seem to be responsive to changes in returns to education. From this Kane (1994) gathers that this is just a reflection of how enrollment rates did not differ by gender for African Americans, even though African American women experienced an increase in their college premium. In fact Kane emphasizes that, contrary to earlier studies, African American women only exhibited higher college participation rates during the early 1970s, and since the mid 1970s African American men and women have demonstrated similar college entry patterns. However it is

important to note that, not only have other studies focused on gender differences in higher education since the 1970s, and actually revealed that these differences have been increasing consistently since then, but also that Kane (1994) observes a very narrow time frame, only looking at enrollment rates between the 1970s and 1980s. Therefore it is certainly possible that African Americans experienced patterns in college enrollment consistent with the general trends beginning in the 1970s, and that like the general trend the gender gap among African Americans has continued to widen since the 1980s. Due to the possibility that the trends among African Americans have changed significantly since the 1980s, this paper focuses on a more recent time frame, and intends to provide more timely evidence concerning the enrollment patterns of African American males and females.

Freeman (1997) also examines college enrollment among African Americans, however her work adds to the literature by approaching the topic in an unconventional way. Most researchers have based their work on human capital and empirical models in order to determine the main factors in the college decision-making process, which ultimately may pose as barriers to many African Americans. In contrast, Freeman conducts interview sessions with actual African American high school students to receive their feedback regarding the barriers they perceive African Americans face when deciding whether or not to participate in higher education.

Freeman gathered African American high school students between the tenth and twelfth grade from five major metropolitan cities: Chicago, New York, Los Angeles, Atlanta and Washington, DC. Freeman chose these cities because they have the largest cross-section of African American populations, and because these are cities where

African Americans have the highest median income and lowest poverty rates. The students interviewed were equal in number by gender, grade and socioeconomic background. During the interview sessions Freeman asked all the students the same question: "Will you help me to better understand why there seems to be a lack of interest among African American high-school graduates regarding participation in higher education?" Freeman found some basic trends in the responses she gathered from the students, and categorized them into two types of barriers, economic/financial and psychological/social. The students' responses closely mirror many of the components of standard human capital models, and reinforce many findings on the determinants of college enrollment outlined by previous literature. Under economic/financial barriers students mentioned two specific deterrents: 1) not having substantial funds to pay for college, and 2) lack of job opportunities that pay to the level of higher education. Having substantial financial backing to pay for college is determined by family income, a family background characteristic emphasized by researchers Black and Sufi (2002). The ability to pay for college is also affected by net direct costs of college, which Kane (1994) considers to be one of the main determinants in preventing college entry among African Americans. The response of not being able to find a job appropriate to the level of schooling is related to the findings of Charles and Luoh (2002), implying that students are somewhat uncertain about the availability of earnings appropriate to their level of schooling once they enter the job market.

The students mentioned three types of psychological barriers: 1) college was never an option, 2) loss of hope, and 3) the intimidation factor associated with going to college. These barriers can essentially be captured in the standard human capital model

by the psychic costs associated with going to college, particularly the third barrier. Many of the students interviewed considered the pressure associated with attending a predominantly Caucasian institution to be a major concern of African American students. Being one of few African Americans on a college campus seemed to create a general feeling of uneasiness among the students, and they considered the adaptation process into this type of environment to be a substantial deterrent to African American participation in higher education. Although the majority of institutions of higher education in the United States are predominantly comprised of Caucasian students, HBCUs should play a large role in alleviating such fears of African American students, by allowing African American students to make the transition from high school to college without such large psychic costs. However, this was not an issue specifically addressed in Freeman (1997)'s research.

The other two psychological barriers encompass another aspect of the college decision-making process, which plays a significant role in encouraging students to pursue higher education and providing them with the information necessary to begin this process. This encouragement and knowledge given to students form the basis of what is called channeling. The idea of channeling emphasizes the role of environmental forces on students and their decisions. These forces may include forces within the home, teachers, counselors, etc., and can all impact a student's decision of whether or not to attend college. Another important aspect of channeling is that, when carried out effectively, it can often mediate the effects of social and cultural differences among students. By providing all students with an equal level of support and encouragement,

channeling could eliminate the psychological barriers that African American students experience when the time comes to prepare for college enrollment.

After gathering and compiling all of the student responses, Freeman (1997) makes it a point to draw attention to the consistent nature of the responses. According to Freeman (1997) the responses she received were similar across geographic regions, school types, socioeconomic levels, and gender. This implies that perhaps African American males and females face the same barriers to higher education, or at least believe that they do. It is interesting that Freeman (1997) observed such similarities between genders given that the observed trends in higher education participation rates do not reflect the consistency of the students' responses. The structure of Freeman's interview sessions may explain why there is a discrepancy between what the students' perceived as barriers to higher education and what is actually occurring. Interviewing students of both genders in the same room may not be the ideal environment to allow for variations in the responses. By questioning males and females in the same room students may be more likely to simply piggyback on each other's responses, without necessarily stopping to think about barriers specifically related to their gender. Freeman also asks a very general question regarding African Americans as a whole, and does not even consider gender issues among the students by asking gender-specific questions.

It was not Freeman's intention to examine the gender differential in college participation among African Americans, and her study provides tremendous insight into the perceptions of actual African American students regarding higher education participation. However it is important to realize that although her study does not specifically detect any gender differences in barriers to higher education, that does not

automatically eliminate the possibility that African American males and females do actually experience different barriers. It is the purpose of this paper to show that there must be at least some difference between the barriers, perceived or actual, which African American males and females face, given the growing gender differential in college enrollment. As mentioned earlier, this paper will address regional differences in the gender enrollment among African Americans, and challenge Freeman's findings that barriers were similar across geographical regions. This paper will specifically be examining differences between rural vs. urban living areas.<sup>4</sup>

The study conducted by Constantine and Perna (2000) is one of few that specifically focus on the gender differential in college enrollment among African Americans. Their paper attempts to provide some explanation of the growing differential between African American men and women by building on previous research, such as the literature already reviewed, which has discussed in great detail many of the determinants of college enrollment. Constantine and Perna (2000) however suggest that many of these explanations, especially those used to analyze racial differences in college enrollment (e.g. family income, parental education, etc.), are not applicable to the gender differential among African Americans. As it was mentioned earlier, African American men and women come from similar backgrounds, therefore family background characteristics and other determinants to college such as college costs cannot effectively evaluate the trends observed among African Americans. Therefore Constantine and Perna (2000) suggest

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<sup>4</sup> Although Freeman (1997) claims that she found no regional differences in the responses she received, it should be noted that Freeman only looked at metropolitan cities. These cities do represent different regions of the country, however given that they all share similar characteristics associated with metropolitan living, assuming that such cities accurately represent geographical differences can be misleading.

that while African American men and women do not differ in the financial capital that affects the college decision-making process, they may differ in social and cultural capital.

Freeman (1997) also discusses the role of social and cultural capital, defining these concepts as assets, in the form of behaviors, on which individuals and families can rely to help maintain a specific set of established values in society. While Constantine and Perna (2000) do not suggest that African American men and women are innately different regarding their maintained values as distinct groups, they do propose that the level of endowment of the characteristics that encourage college enrollment may be higher among African American women than their male counterparts. To measure the level of social and cultural capital possessed by African American men and women, Constantine and Perna use data from the National Educational Longitudinal Study of 1988 eighth graders (NELS:88/94). This dataset examines many elements associated with social and cultural capital, such as the amount of help students receive on college and financial aid applications, the frequency at which students discussed classes, grades and preparing for the SAT/ACT with parents, and the level of educational expectations a student maintains. Constantine and Perna (2000) add to the standard human capital model by using variables to capture the typical costs and benefits associated with enrolling in college, and including the variables capturing social and cultural capital. They then estimate a multinomial logit model in order to test the importance of social and cultural capital and, conditional on such characteristics, whether African American women are more likely than men to enroll in college. The model includes three choices:

(1) do not enroll in any post-secondary institution, (2) enroll in a two-year institution, and (3) enroll in a four-year institution, and assumes that the choices are unordered.<sup>5</sup>

Two important results are revealed from Constantine and Perna's study, which provide insight into the role of social and cultural capital. First, for all variables of social and cultural capital higher values of these variables increased the probability of enrolling in a four-year institution, while only parental involvement affected enrolling in a two-year institution. Second, including social and cultural capital variables in the model to determine college enrollment reduces the impact of being female, suggesting that the higher college attendance rates of African American women compared to men are not due to the fact that they are simply female. Constantine and Perna (2000) then perform an Oaxaca decomposition analysis to determine how much of the gender gap can be attributed to the actual endowment of the characteristics studied or the returns to such characteristics. They find that 7% of the gap for not enrolling in any type of post-secondary institution is due to endowment differences, implying that if African American men and women had similar distributions of characteristics the difference in probability of not enrolling would be 2% rather than 9%, thereby closing the enrollment gap.

Loury (2004) also focuses specifically on the gender gap among African Americans, and like Constantine and Perna (2000), examines the role of factors that are strongly related to the concepts of social capital and channeling. According to Loury (2004) nearly a third of the gender gap among African Americans can be attributed to a greater influence of college-educated siblings on African American women than African

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<sup>5</sup> One of the shortcomings of the multinomial logit used to examine college enrollment is the assumption that the three choices are unordered. To test if the choices are independent Constantine and Perna (2000) use a Hausman specification test, and find that in all specifications of the model used, the assumption that

American men. Using data from the National Longitudinal Study of Youth, which began annually interviewing individuals between the ages of 14 and 22 in 1979, Loury (2004) finds that the increased college enrollment is positively associated with the number of college-educated older siblings an individual has. This relationship may be of particular interest when looking at the college enrollment rates of African Americans considering the substantial psychological barriers and lack of information channeling, discussed by Freeman (1997).

Loury (2004) finds that the positive effect older college-educated siblings have on the enrollment decisions of the younger siblings is significantly larger for African American women than men. Furthermore Loury (2004) finds that differences in sibling effects has more to do with sibling activity, such as attending college, rather than actual sibling gender. Therefore regardless of the gender of the older sibling, if that sibling attended college then his or her younger sibling will be more likely to attend college as well, thereby mitigating the negative effects of psychological barriers African American adolescents often face.

To explain why the relationship between college-educated siblings and college enrollment has a larger effect on African American women compared to men, Loury (2004) refers to other research that may provide some insight into the differential sibling effects. One reason African American males do not experience the similar positive externalities associated with the college attendance of an older sibling may be that strong negative peer effects are responsible for reducing the benefits of having a college-educated sibling. Hout and Morgan (1976) attribute the higher academic achievement of

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the choices are independent could not be rejected. Therefore Constantine and Perna (2000) assume that the logit model used should yield unbiased results.

African American females to more parental encouragement compared to African American males, while Ferguson (1999) attributes the declining test scores of African American men to negative peer effects associated with the idea of “acting white.” Other research (Coates, 1987) also finds that females are more likely to choose family members as role models compared to males, which would suggest that males are finding their role models elsewhere, perhaps within their peer circle.

The research of Constantine and Perna (2000) and Loury (2004) provide substantial insight into the gender gap among African Americans. Both focus on the role of information channeling, which other literature focusing on the general gender gap has somewhat failed to mention. Furthermore these two studies suggest that many of the factors found to determine college enrollment, such as college costs, may not be helpful when looking at the gender gap among African Americans, and therefore examining other possible factors may be necessary to truly understand the nature of the gap.

### *B. Literature on Crime*

While there exists very little literature explicitly dealing with the connection between college enrollment and crime, reviewing general literature on crime is useful in the sense that it provides some understanding of the factors that may induce individuals to participate in criminal activity, and also explain why certain areas of the country may be more susceptible to crime. Glaeser and Sacerdote (1996) provide several explanations for the latter.

In their work Glaeser and Sacerdote (1996) discuss possible factors that could explain why crime rates are much higher in larger cities than in smaller cities or rural areas. Metropolitan statistical areas (MSAs) have 79% more crime than urban areas not

in MSAs, and 300% more crime than rural areas. To explain the correlation between city size and crime, Glaeser and Sacerdote (1996) decompose the relationship into four categories: 1) higher pecuniary returns to crime, 2) lower probability of arrest, 3) endogenous characteristics, and 4) exogenous characteristics. The first two categories are essentially based on a cost-benefit analysis similar to that involved in the college decision-making process. Glaeser and Sacerdote (1996) suggest that in larger cities, where population densities are particularly high, there are higher returns to crime. These higher returns result from the fact that higher population densities lower transaction costs, not only by increasing the proximity of the wealthy to the poor, but also by allowing criminals to more selectively choose their targets. The streets of densely populated cities are much more crowded than smaller cities, which enhances the probability that a victim will cross a street criminal's path. Another increased benefit of crime results from the existence of scale economies within larger cities. Criminals are able to take advantage of scale economies because the presence of markets for stolen goods makes it cheaper for criminals to obtain criminal related paraphernalia, and makes it easier for criminals to dump any stolen property when necessary. And while the benefits of crime are higher in larger cities, the costs are much lower than in smaller cities or rural areas. The most obvious factor a criminal would consider when evaluating the costs of crime would be the likelihood of being arrested. Glaeser and Sacerdote (1996) suggest that this cost is lower in larger cities because of the higher anonymity resulting from the weak information connection between law enforcement and the citizens.

In addition to the higher benefits and lowered costs criminals experience with large cities, Glaeser and Sacerdote (1996) also mention some characteristics that are

endogenous to larger cities, which make them more susceptible to higher crime. They suggest that poor job opportunities for unskilled individuals within larger cities may cause the residents of these cities to develop tastes and skills that make crime more appealing. It also may be the case that urban living in general is highly correlated with the development of criminal tendencies. In conjunction with these endogenous characteristics there may also be some exogenous characteristics of larger cities that affect the level of crime observed in larger urban environments. For example, while large cities attract on average individuals with relatively higher human capital, these areas also have a tendency to disproportionately draw in individuals with extremely low levels of human capital as well. Because larger cities also experience exogenous shocks to the labor market, individuals with lower levels of human capital may become even more attracted to crime given the lack of opportunity in the legal sector. If such individuals begin to develop tendencies and skills related to crime, these tendencies may also be passed down to younger generations. This is well related to the parental background characteristics discussed in the literature on higher education. Parents with low levels of human capital or preferences towards criminal activity may cause their children to develop similar tendencies.

After decomposing the relationship between city size and crime, Glaeser and Sacerdote found that most of the connection (45%) could be attributed to the high level of family disruption observed in larger cities, represented by the high percentage of female-headed households found in cities. This result raises some important issues regarding the impact of single parenthood on adolescents and the preferences they develop. This issue is particularly interesting when looking specifically at African American adolescents,

who are more likely to be raised in a single parent, and usually female-headed home, and will be discussed in more detail later in the paper.

As Glaeser and Sacerdote (1996) mentioned, in larger urban cities, wealthy individuals are often placed in close proximity to poorer individuals, creating a much more selective pool of victims for criminals. This disparity in income, which is often present in cities, is also the subject of focus for Kelly (2000) who examines the relationship between inequality and crime. In his study Kelly (2000) finds that while inequality seems to have no effect on property crime, it does have a strong impact on violent crime. When trying to establish a link between inequality and crime Kelly (2000) also finds that there are two significant theories of crime that may help explain why individuals participate in violent crime. These two theories are the strain theory (Merton, 1938) and the social disorganization theory (Shaw and McKay, 1942).

The strain theory predicts that unsuccessful individuals will feel a certain level of frustration when faced with the relative success of other individuals around them. Therefore the greater the inequality, or gap between the economically successful and unsuccessful, the higher the feelings of strain among the latter group. In his study Kelly (2000) measures inequality from an economic standpoint (ratio of mean to median household income) as well as an educational perspective (human capital levels). Kelly (2000) finds that while both measures of inequality have effects on violent crime, the relationship between violent crime and educational attainment seems to be significant less often. Kelly (2000) also finds that race is a significant predictor of crime, and suggests that this is due to either the low economic status of African Americans males or the social isolation experienced by this community. These two aspects of inequality,

income and race, appear to have a significant impact on violent crime, keeping with the basic premise of the strain theory.

While income inequality is strongly correlated to violent crime, like Glaeser and Sacerdote (1996), Kelly (2000) finds that the most important single predictor of violent crime is the percentage of female-headed households. The percentage of female-headed households is an indicator of weak family structure, and its link to violent crime supports the social organization theory. This theory predicts that crime occurs when instruments of social control begin to deteriorate. One factor that weakens a community's control over its members is family instability. Sampson (1987) addresses the relationship between family disruption and crime as it specifically relates to African Americans. According to Sampson (1987) one of the main causes of family disruption among African Americans is adult male joblessness. He finds that African American family disruption has strong effects on juvenile crime due to reduced formal and informal social controls, which falls in line with Shaw and McKay's (1942) social disorganization theory.

Both male and female children who come from broken homes should presumably experience the same levels of emotional disturbance, and therefore should be equally as likely to participate in crime. However the incarceration rates presented in the introduction, as well as other substantial evidence, reveal that men engage in criminal activity much more than women. African American man under the supervision of the criminal justice system for every three to four African American men in the labor force (Freeman, 1996).

Given the high proportion of men within the United States prison system, researchers and theorists have attempted to explain the growing number of men, especially young men, who are involved in criminal activity.

Like Glaeser and Sacerdote (1996), Freeman (1996) attributes increased criminal behavior to the pecuniary returns to crime. However, while Glaeser and Sacerdote (1996) associate high returns to crime with the reduced costs criminals face within larger cities, Freeman (1996) explains that these increased pecuniary returns to crime depend on the earnings opportunities that exist in the legal sector. Therefore if the returns to legitimate employment fall, individuals may be attracted to criminal activity, which would now have relatively higher returns. What is so interesting is that between the mid-1970s and 1990s, the same time period during which the number of men in prison nearly tripled, legitimate earnings opportunities decreased dramatically for low-skilled male workers. It was during this time that the manufacturing sector in the United States contracted significantly, due to change in technology and product demand, leaving the low-skilled workers, typically male, within this sector with reduced real income. At the same time the manufacturing sector collapsed, the sectors that were female intensive, such as education, boomed, creating more and more job opportunities for women and college educated workers (Murphy and Welch, 1991). Therefore the major decline in the manufacturing sector in conjunction with the expansion of the services sector can explain why there is such a large proportion of men involved in criminal activity compared to women. This also may help explain why so many more African American men participate in criminal activity compared to the general population of men. During the time of the deterioration of the manufacturing sector African American men were

disproportionately represented in this sector, and therefore were hit harder than the general male population (Bound and Johnson, 1992). Evidence shows that young men respond substantially to the economic returns to crime, so given that African American men were disproportionately affected by the declining earnings in this sector, they may have been more attracted to the returns offered in the illegal sector once the returns to the legitimate sector declined.

Freeman (1996) also mentions that the expansion of the drug market resulting from the increasing demand for drugs in the United States can also explain the increased returns to crime. Due to the development of new sources of drugs, the drug market has expanded considerably in the recent decades, making this illegal sector particularly attractive. Freeman (1996) points out that a significant proportion of prisoners have been incarcerated on drug related charges, and of those individuals incarcerated for non-drug related, between 50% and 80% tested positive for drugs in 1992. Grogger and Willis (2000) add to the literature on crime by further exploring the effect of drugs on urban crime. In their work Grogger and Willis (2000) hypothesize that the emergence of crack cocaine specifically in the 1980s has had a tremendous impact on the level of crime in urban areas. Evidence reveals that crack cocaine is particularly linked with violent crime. For example, since the arrival crack cocaine in the 1980s, aggravated assault rose significantly. Furthermore there are many reports that link crack cocaine to gang violence, murder rates, unemployment, poverty and family disruption.

Grogger and Willis (2000) use a framework to examine the effect of crack cocaine on crime that suggests the relationship between the two can be explained via three components of the conceptual framework. The first part of their framework

explains why the drug market has expanded in decades past. Because crack cocaine is a more intoxicating form of the drug cocaine, the process of synthesizing crack cocaine reduces its unit cost. So unlike Freeman (1996), who attributed crime to the increased demand for drugs, Grogger and Willis (2000) consider the rightward shift in supply of crack cocaine to be the main impetus for the rise in crime. The second part of their conceptual framework focuses on property rights. Due to the illegal nature of drug related activities, particularly selling drugs, crack cocaine dealers are not able to take advantage of property rights like individuals working in the legal sector. Therefore for each crack cocaine dealer, violence or the threat of violence may be the most effective way of establishing and protecting their areas of operations, expanding their operations, enforcing agreements, etc. The third component of the framework explains why the emergence of crack cocaine could have also had an effect on property crime in addition to violent crime. Grogger and Willis (2000) suggest that property crime may be complementary to drug dealing as a way to earn additional income. This may be true for crack cocaine dealers given that this particular drug is extremely cheap compared to other drugs.

To test their hypothesis, Grogger and Willis (2000) use a difference-in-difference estimator (Ashenfelter, 1978) to show the how the arrival of crack cocaine impacted central-city crime rates and not the surrounding suburban areas. By using a before-and-after estimate of the effect of the arrival of crack cocaine, Grogger and Willis (2000) found that in the absence of crack cocaine, the crime rate in 1991 would have remained below the peak crime rate observed during the early 1980s. For example, in 1991 the general crime rate for the central cities of the metropolitan areas (MAs) observed was

10,819, where the rate is the number of crimes committed per 100,000 residents.

However in the absence of crack, Grogger and Willis (2000) find that this rate would have been 10% lower, at 9,694.

### **III. Theoretical Framework**

Now that substantial background literature has been reviewed, it is important to explicitly explain in theory how crime and college enrollment rates may be related. The theoretical framework that will be used in this paper can essentially be outlined by a series of questions concerning the linkages between crime and college participation rates, and how these linkages specifically affect African Americans. This section will attempt to answer three questions: 1) Why would criminal activity have a negative impact on college enrollment? 2) Why would this negative relationship disproportionately affect or be more prevalent among African Americans? 3) How would this relationship impact the gender differential in college enrollment among African Americans? These three questions will help outline the theoretical basis of the hypothesis of this paper, and the answers to these questions will provide some indication as to what types of results should be expected from the empirical analysis.

#### *A. Labor Force Participation, Criminal Activity and College Enrollment: A Cost-Benefit Analysis*

The neoclassical framework used in labor economics explains the decision-making process individuals undergo when choosing their level of labor force participation. Under this model individuals have a choice between market time and non-market time, and will allocate their time between the two. The way in which an individual will allocate his or her time depends on the value of non-market time

compared to market income. If the value of non-market time exceeds the market income an individual will not choose to work an additional hour. If the value of non-market time is less than the market income an individual will choose to work an additional hour. The overall utility individuals gain from a certain combination of market and non-market time is represented by an indifference curve. An individual's utility function can be expressed as  $U = U(Y,L)$ , where utility ( $U$ ) is a function of combinations of real income ( $Y$ ) and leisure ( $L$ ). An indifference curve indicates how individuals value their non-market time. Compared to individuals with flatter indifference curves, individuals with steeper indifference curves value non-market time very highly, for it will take a larger increase in real income to induce them to give up an hour of leisure time and allocate that hour to market time.

The allocation of an individual's time to both market and non-market time is determined by the individual's budget constraint, expressed as  $Y = -(w/p)L + (w/p)T$ , where ( $Y$ ) is real income, ( $w/p$ ) is the real wage, ( $L$ ) is leisure and ( $T$ ) is total time available. This equation represents the two constraints an individual faces, a time constraint and a goods constraint. The slope of the budget constraint is  $-(w/p)$ , indicating that a decrease in real income will lead to an increase in the amount of time allocated to leisure. The point where an individual's indifference curve is tangent to his or her budget line is where that individual's utility is maximized. This can be seen in Figure 2 below.

**Figure 2 – Utility Maximization**  
**Market income**

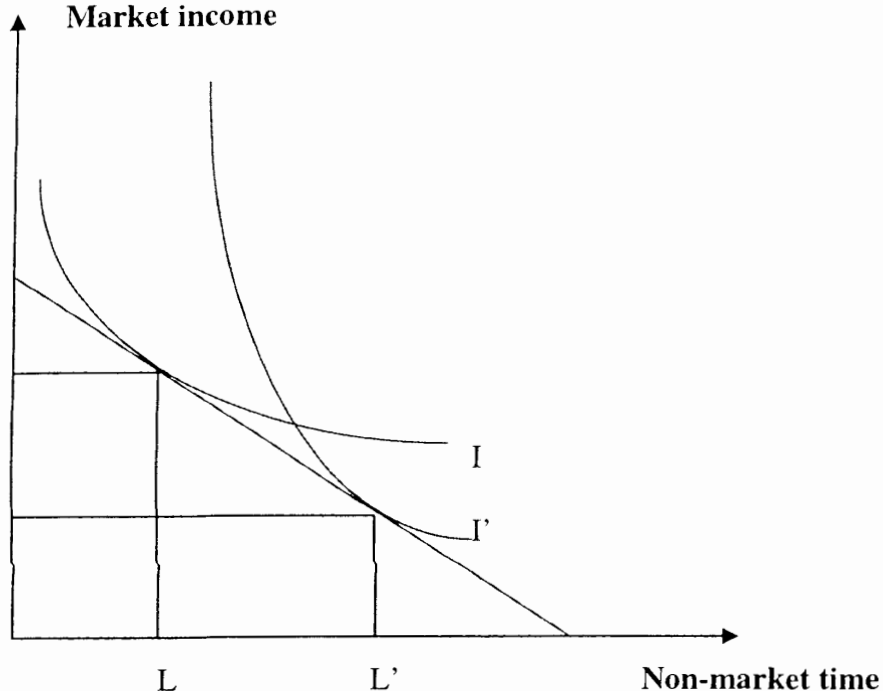


Figure one shows the utility maximization points of two different individuals. The utility maximization point of individual I is represented by L. Individual I' has a utility maximization point corresponding to L'. Individual I' values non-market time more than individual I, as indicated by the steepness of the indifference curve.

The economic theory of crime (Becker 1968) is a variant of the neoclassical, and assumes that individuals allocate their time between market time and criminal activity specifically, as opposed to general non-market time. Individuals choose how much time to allocate between the two by comparing the market wage to the expected returns to criminal activities. Individuals must also take into consideration the costs of criminal activity, which are the likelihood of getting caught and the severity of punishment. If criminal activity is considered a type of non-market time, it is possible to return to Figure 1 to see how individuals choose between criminal activity and legitimate activity, or

market time. If non-market time is now considered to be criminal activity specifically, then individual  $I$  values illegitimate non-market time relatively highly. The value this individual places on criminal activity would be the earnings the he or she expects to receive, also taking into consideration the risk associated with the activity. Therefore only a relatively large increase in legitimate income would induce the individual to give up an hour of time participating in criminal activity.

The human capital theory is the dominant framework used by researchers when approaching the topic of college enrollment. Although this theory has been mentioned in the literature review, it is useful to discuss the theory in more detail. Under the human capital model college attendance is considered an investment individuals make in order to further enhance their market skills, productivity, and future earnings. When deciding whether or not college is a good investment, individuals evaluate the costs and benefits associated with enrollment. There are two types of costs associated with college enrollment, direct costs and the opportunity costs. Net direct costs include tuition, textbooks, etc., minus financial aid received. The earnings from entering the labor force that are forgone to attend college are considered the opportunity costs. After graduating from college an individual expects to receive increased earnings (compared to individuals without a college education) once he or she enters the labor force. A college graduate may also expect to be able to choose from a pool of more attractive employment opportunities. These are considered the benefits of enrolling in college. The human capital theory predicts that college enrollment should increase when any factor causes a reduction in the costs of attending college. Such factors include grants, scholarships and other forms of financial aid, which would all have an impact on the direct costs of

college. However, individuals also take into consideration the opportunity cost of attending college, therefore any change in labor market wages or unemployment will affect the opportunity cost of going to college. The opportunity cost of attending college is the component of the human capital theory that this paper will draw upon in order to establish a link between crime and college enrollment.

Most researchers have used the human capital model to explore topics related to college enrollment rates, assuming that individuals only use a comparison of the labor market wage with college education to the labor market wage without college education as a value indicator of the opportunity cost associated with going to college. However for some individuals there may exist earnings opportunities other than the labor market that can serve as an alternative to attending college. Criminal activity, especially property crime and drug-related crime (selling), can also offer some earnings opportunities for individuals. This would be particularly true for individuals who live in areas with high crime rates. Given their exposure to crime, these individuals may be able to accurately evaluate the economic prospects of participating in criminal activity. Therefore, if the market wage is low in a certain area, an individual living in that area may not necessarily choose to enroll in college as the only alternative, as the standard human capital theory would suggest. If there is a substantial amount of crime in that area the individual can also evaluate the earnings he or she would expect to receive from criminal opportunities.<sup>6</sup>

Therefore not only can an increase in the market wage increase the opportunity cost of

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<sup>6</sup> Although there is no precise way to calculate earnings in the illegitimate sector, Freeman (1996) suggests that among youth there is a general perception of the level earnings opportunities available within this sector. Information from the NBER Inner City Youth Survey indicates that youths do indeed make estimates regarding the returns to criminal activity, and have a general perception of whether these earnings rise or fall from a given year to the next.

attending college, but an increase in expected criminal earnings can also increase the opportunity cost, having a negative impact on college enrollment.

The neoclassical model suggests that individuals are able to choose a combination of hours dedicated to market time and non-market time, as opposed to dedicating all of their time to only one activity. Therefore if criminal activity is considered a part of non-market time, individuals are not restricted to choosing only crime or only market time. Freeman (1996) confirms this by providing evidence that young adults do combine crime and work, or shift between the two without difficulty. Ethnographic research reveals that legitimate and illegitimate work often overlap, particularly for young drug dealers. Often times drug dealing may be serve as transitional work when an individual finds himself or herself temporarily unemployed. The legal sector also offers the individual a less risky alternative to the streets. Drug dealers may also benefit from dedicating some time to the legal sector by having the opportunity to possibly expand his or her clientele.

However, suppose an individual is not choosing between market time and criminal activity, as the economic theory of crime suggests. It was previously mentioned in the discussion of the human capital theory that some individuals may be able to choose between college enrollment and criminal activity, especially if wages in the legal sector are low or there is high unemployment. Although an individual may be able to dedicate time to both criminal activity and market time, there may be some reasons why an individual would not be able to do the same when choosing between criminal activity and college enrollment, which would help explain why crime may have a negative impact on enrollment rates. Under the neoclassical model there is a utility maximizing outcome that some individuals face, which results in zero market time and all time being dedicated to

non-market time. This occurs when the indifference curve is steeper than the budget constraint at the point where no hours of work are desired, and is referred to as a corner solution. Although there is no graphical depiction of the choice between crime and college enrollment, a similar outcome may often be reached when an individual is choosing between the two. While it is not impossible for an individual to dedicate time to both criminal activity and college, the human capital theory provides several predictions that may explain why a decision that is more similar to a type of corner solution may be more common when individuals are choosing between crime and college enrollment.

One prediction of the human capital theory is that individuals who do not expect to continuously participate in the labor force will be less likely to enroll in college. Individuals who do not participate in the labor force continuously will not have enough time to recoup the costs of attending college, and therefore will not choose to make such a costly investment. This concept of labor force continuity may explain why individuals who decide to participate in criminal activity may choose to not enroll in college at all. If a young adult is participating in crime and/or chooses to do so in the future, his or her future allocation of time to the market is may be limited. The individual may either work part-time and devote the portion of his or her time to criminal activity, or may simply enter and exit the labor force frequently, depending on when he or she decides to participate in crime. In this situation enrolling in college may not be an appropriate investment because the individual will be unable to regain the costs of attending school.<sup>7</sup>

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<sup>7</sup> The theoretical framework used in this paper assumes that there is no part-time enrollment. Although part-time enrollment is considered a form of college enrollment, it is not specifically addressed in this paper. Only full-time enrollment is being examined in this research.

As the human capital theory suggests, there are numerous costs associated with attending college. With tuition increasing each year, the direct costs of college continue to rise for all types of institutions. Although individuals who attend college can expect to receive higher earnings once they enter the labor force, there are immediate costs associated with going to college that individuals going straight into the labor force do not face. For this reason allocating time to both college and criminal activity may not be a cost efficient decision for individuals who are considering criminal activity as an option. The costs of college are too high for an individual to only dedicate a minimal amount of time to attending class and doing schoolwork. Furthermore the income earned from criminal activity will most likely be unable to compensate for the high costs of college. The returns to criminal activity may often be used as complementary or temporary income to the earnings received in the labor market. Therefore from a utility standpoint, allocating time to both the labor market and criminal activity may not be an efficient use of an individual's time. However, because individuals do not earn significant income when enrolled in college, the benefits of criminal activity may be unable to outweigh the costs of college enrollment, which suggests that individuals will choose one option over the other.

The neoclassical model, economic theory of crime, and human capital theory all postulate the individuals make their decisions regarding the most efficient way to use their time based on a cost-benefit analysis. Although each theory discusses distinct uses of an individual's time, they are similar in that they outline how individuals make decisions. Using all three of these models therefore is helpful in developing a framework

for understanding why individuals may choose between crime and college, thereby establishing a link between the two options.

*B. Criminal Activity and African Americans: Inequality and Family Instability*

The previous section explained why criminal activity may have a negative impact on college enrollment, by explaining the dichotomous nature of the choice between the two options. This section will explore why certain individuals may be more exposed to criminal activity than others, thereby providing these individuals with an alternative to college enrollment other than the labor market. Merton's (1938) strain theory, already discussed in the literature review, predicts that crime will occur when individuals of low social and economic status become frustrated with their inability to attain the level of success of those of higher social and economic status surrounding them. Due to their alienation from society, these individuals may commit crime in response to their situation. This type of social alienation can result from income inequality and racial inequality, therefore individuals receiving low earnings and/or individuals belonging to a racial minority are more likely to fall victim to such alienation. The strain theory provides an excellent framework for examining why criminal activity is high among African Americans, particularly African American men. As a racial group African Americans experience both income and racial inequality, and their social isolation may explain why researchers have found race to be a significant predictor of crime, meaning that areas with larger percentages of nonwhites tend to exhibit higher crime rates.

Low economic success, particularly among African American men, is one phenomenon that may help explain why high criminal activity exists within the African American community, and more so among African American men. However there is

another phenomenon that is more pronounced among African Americans compared to other racial groups, which can also explain why criminal activity is high among African Americans. This phenomenon is the high percentage of female-headed households present within the African American community, and its effect on criminal behavior can be explained by Shaw and McKay's (1942) social disorganization theory. Under this theory any factor that reduces the effectiveness of informal social controls is considered as a possible predictor of crime. Shaw and McKay (1942) identified such factors to be poverty, ethnic heterogeneity and residential mobility. However in addition to these factors family instability, measured by the percentage of female-headed households, has been identified as having a significant impact on crime. With the percentage of female-headed households added to the list, the social disorganization theory helps explain why criminal activity could possibly be a significant factor leading to the decline in college enrollment among African Americans.

Sampson and Groves (1989) actually test Shaw and McKay's (1942) social disorganization theory to observe the community effects of the aforementioned factors contributing to the reduction of social control. Using 238 localities in Great Britain as observations, Sampson and Groves (1989) find that the various factors leading to social disorganization do affect the level of criminal activity. Specifically Sampson and Groves (1989) find that family disruption has significant indirect effects on the level of victimization, which they divide into three categories: 1) mugging/street robbery, 2) stranger violence, and 3) total victimization. They find that family disruption can account for 50% of mugging and street robbery, 23% of stranger violence, and 27% of total victimization. The findings of Sampson and Groves (1989) support the social

disorganization theory, and suggest that the percentage of female-headed households does has a significant impact on criminal activity of youth.

Although the social organization theory does explain that criminal activity may be high among African Americans due to the high percentage of female-headed households, it does not explain why African American men may be disproportionately affected by this phenomenon when compared to African American women. The next section will explain why criminal activity may be a factor leading to the growing education gap between African American men and women, by examining how African American male and female adolescents are affected by and respond to family disruption.

*C. Criminal Activity and the Gender Enrollment Differential: Effects of Marital Status on Adolescents and the Family as an Economic Unit*

The damaging effects of family instability on children cannot be entirely explained by economics. Although there are economic consequences of being raised in a single-parent home, some of which will be discussed later in this section, many of the consequences are social in nature. It would be limiting to ignore the social factors that are undoubtedly playing a role in the observed trends affecting African Americans, therefore using fields of study outside of economics is helpful in order to obtain a more comprehensive understanding of what is occurring in today's society. Research conducted in the social psychology field provides substantial insight regarding some of the factors contributing to the trends among African Americans today, particularly dealing with the effects of family instability. Because family disruption can cause emotional distress in children, this particular factor has a significant impact on adolescent

development of tastes and preferences, which can lead to very negative behavioral results in an adolescent's future.

Mandara and Murray (2000) examine the effects of parental marital status and family functioning on the self-esteem of African American adolescents. In their study, Mandara and Murray (2000) found that African American boys from married-couple homes had higher self-esteem than boys from single-parent homes, when family income and family functioning were controlled. In contrast, African American girls seemed to be unaffected by parental marital status, and their self-esteem development tended to be more based on actual family relational factors than structural factors. Other research runs consistent with the findings of Mandara and Murray (2000), indicating that African American adolescents living in single parent homes are less likely to be in school (McLanahan, 1985), and more likely to engage in violent behavior (Paschall et. al., 1996).

Because family structure has a disproportionately negative impact on African American male adolescents, the percentage of female-headed households gives impetus to a very viscous economic and social cycle affecting African Americans as a whole. African American male adolescents who grow up in single-mother homes may develop low self-esteem and experience emotional distress, which may lead to self-destructive behavior such as violent or criminal activity. These same adolescents may grow into adults who are either still involved in criminal activity, in jail, or, even if fortunate enough to avoid incarceration, will have forgone college enrollment during their adolescent years and will try to enter the labor market with low levels of human capital. African American female adolescents coming from similar backgrounds may be able to

avoid such destructive behavior given their resilience to weak family structure. These females may spend their adolescent years focusing on more constructive activities such as academics and preparing for college. However once these females grow into adults, finding a marital partner with comparable human capital levels may be difficult, given the relatively high proportion of African American adult men who chose to forgo college during their adolescence. The predicament that these African American women face only perpetuates the cycle of a pathological family structure, increasing the number of single African American women who may end up raising families on their own and becoming the primary income earner in the household.

Family disruption not only has a psychological effect on individuals, but also has tremendous effects on the functioning of the family as an economic unit. Returning to the neoclassical model, the family is considered a unit, and the adult members of this unit make rational decisions regarding the combination of commodities that will maximize its utility as a unit. Similar to the model used to explain labor force participation rates of individuals, the model explains that the family must also allocate time between the home and market efficiently in order to produce a certain combination of commodities and maximize its utility. To do this adult members of the family, traditionally a man and a woman, must decide how each individual will allocate his or her time. Individual allocation of time to market production and home production will depend on which individual has a higher comparative advantage. If the ratio of the value of time spent in home production to the value of time spent in market production is different for each adult member of the family, labor specialization creates an efficient use of time and will enable the family to maximize its utility. Traditionally women have been considered to

have a comparative advantage in home production, while men have been considered to have a comparative advantage in market production.<sup>8</sup> Therefore, based on traditional labor specialization, families can maximize utility when the woman spends more time in home production and the man spends more time in market production.

Although there are several disadvantages to the traditional specialization of labor, particularly for women the neoclassical model still suggests that there are efficiency gains associated with some form of labor specialization.<sup>9</sup> Using the neoclassical framework and its conclusions regarding efficient commodity production, it is possible to understand the human capital investment decisions of African American women, given that African American families tend to fall outside of traditional family structure. Any single-parent household will be unable to reap the benefits associated with labor specialization. Single adults who head these households will be forced to allocate their time between both market and home production without the help of a partner, which may reduce the efficiency of commodity production for that household. Because households with children present are typically headed by females, the lack of labor specialization will have a disproportionately negative effect on females. The high proportion of single African American females with children indicates that this is a significant problem facing this group. Without the ability to specialize to some extent, African American females will become both the breadwinner and homemaker within a family unit.

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<sup>8</sup> These comparative advantages may only exist due to the fact that men and women may be raised with certain expectations and have received different types of training. Although this is how labor specialization has been outlined traditionally, this does not mean that a woman specializing in home production and a man specializing in market production is the only efficient way maximize utility.

<sup>9</sup> Disadvantages of traditional labor specialization for women: 1) bargaining power may be significantly reduced, 2) children, particularly girls, may be treated differently in order to guide them towards home

It can be argued that traditionally women only have a comparative advantage in homemaking because of different expectations developed in response to societal standards and differences in education and training. From this it can also be argued that more recently, expectations among women have changed, particularly among African American women who may now expect to be the primary or sole earner within a household. These new expectations of African American women may affect their decisions regarding human capital investment as a means to increase earning potential, thereby leading to an increase in their college enrollment rates.

In addition to labor specialization there are several reasons why forming families within the traditional structure of husband, wife and children can be economically beneficial. Families are able to take advantage of economies of scale through specialization and experience positive externalities when consuming certain goods. Families often consume public goods, which means that one individual's use of the goods does not diminish the consumption of the same goods by other members of the family. Traditional couples are also able to invest in marriage specific activities such as childrearing, which is much more valuable in marriage than it would be if the marriage were to end. A family can significantly benefit from the added worker effect, which occurs when one spouse becomes unemployed and the other spouse is able to cover at least some of the family's expenses by becoming a second earner. In addition to having two potential earners, there are several institutional benefits of which married couples can take advantage. Healthcare coverage, pension rights and social security benefits, are some of the advantages of following the traditional family structure.

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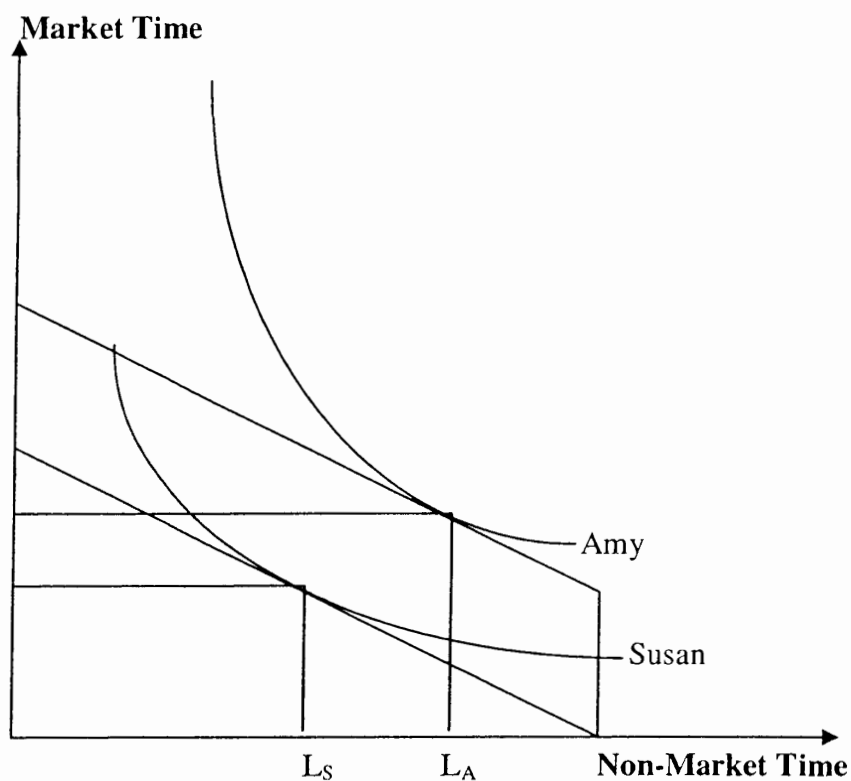
production, and 3) the value of a woman's home production peaks during child-rearing years and then declines with age

Due to their increased likelihood of being single, African American women are unable to take advantage of these types of benefits associated with family formation. The added worker effect is a significant advantage, particularly when two spouses have children. Expenses rise significantly with each additional child, therefore having two potential earners is key to maintaining an income level sufficient enough to sustain the needs of the entire family. Single African American women with children cannot benefit from the added worker effect, and their responsibility as the only family earner is imperative to the family's economic well being. To see how this may affect the human capital investment decisions of African American women it is helpful to return to the neoclassical model explaining labor participation.

Married women who participate in the labor force may receive income in addition to what they earn while participating in the labor market. Income earned outside of the labor force is referred to as non-labor income. A spouse's salary is considered a form of non-labor income, and this additional income will raise an individual's budget constraint through its additive effects on the goods constraint (now  $wH + A = pY$ ), where (A) is non-labor income. By adding non-labor income, a woman's budget constraint will become  $Y = -(w/p)L + (wT + A)/p$ . To understand how non-labor income affects an individual's utility maximization it is helpful to compare the budget constraints and indifference curves of two women, one married and the other single.

Figure 4 shows the budget constraints and indifference curves of Amy and Susan. Amy is married and her husband is employed. The additional income she "earns" from her spouse's employment is considered her non-labor income, and is represented by the vertical portion of Amy's budget constraint. Susan on the other hand is single and does

not have any additional income. Her budget constraint is lower than Amy's and extends all the way to the horizontal axis, indicating that when Susan works zero hours she does not have any form of income. The indifference curves of these two individuals are different as well. Assuming leisure time is a normal good, and that the income effect is larger than the substitution effect Amy will work less hours and dedicate more time to leisure activity, compared to Susan, whose indifference curve reflects a preference for market time due to her lack of outside income. The point of tangency of the budget lines and indifference curves mark each individual's maximized utility. With the additional non-labor income Amy is able to achieve a higher level of utility than Susan.



Developing a theoretical framework is critical to the hypothesis of this paper because it explains through what mechanisms crime is negatively affecting college enrollment, and more importantly why these mechanisms or channels are more prevalent among African Americans. The theoretical framework also provides some insight as to what factors should be considered when conducting empirical analysis, and how these variables will affect the college enrollment rates of African American men and women. The following section will outline the variables selected for empirical analysis, and explains why certain variables were included or excluded, and makes several predictions regarding the expected effects of the explanatory variables on the dependent variable.

#### **IV. Data**

The purpose of this paper is to test the effects of crime on college enrollment rates among African American men and women. However, it is not assumed that criminal activity is the only determinant of college enrollment, and therefore it is important to acknowledge the interaction of a number of different variables that each may play a significant role in determining college enrollment rates. For this reason several variables will be used in the empirical analysis to examine college enrollment among African American men and women. This paper follows previous work by including several commonly researched variables. Such variables include household income, the percentage of female-headed households, unemployment, and average education attainment. These variables were selected for three reasons.

The first reason these variables were chosen is that each of these factors have been found to have a significant impact on college enrollment rates among the general

population. The second reason is that these variables also happen to be characteristics that are highly pronounced within the African American community. Compared to the general population African Americans have a low median household income, a devastatingly high proportion of households headed by single females, high rates of unemployment, and low average educational attainment. Therefore, in order to thoroughly examine the recent trends in higher education among African Americans specifically it is practical to include such variables. Furthermore it is important to ensure, when testing for the effect of crime on college enrollment, that the results are not picking up the effects of some other existing factors. This is the third reason for selecting these variables. By including these other variables in the empirical analysis, many of the other factors driving college enrollment rates can be controlled for, allowing the researcher to make clear distinctions between the effects of crime and the effects of the other determinants on college enrollment.

There are also some variables typically examined in research on higher education that this paper does not include. Researchers using the standard human capital model to examine college attendance typically include the direct costs of college and the college premium in their model. This paper does not include these two variables for several reasons. First, the purpose of this paper is not to determine a general model of college attendance. Previous research has already established a basic model of college attendance, and it is widely accepted that the costs and benefits of college, represented by tuition costs and the college premium, are significant factors in an individual's college decision-making process. The intention of this paper is to determine what factors are causing the disparity in college attendance between African American men and women,

therefore including variables that incorporate a model of general college attendance is somewhat superfluous.

Second, median household income serves as a proxy for the direct costs associated with college, therefore it is unnecessary to include both variables in the empirical analysis. Individuals coming from families at the low end of the SES spectrum are disproportionately affected by rising tuition costs given their level of household income. Compared to White Americans, African Americans are more likely to come from low SES families, and therefore are disproportionately affected by college costs. Therefore including the median income of African American households indirectly measures the effects of college tuition on African American adolescents and their decisions regarding college attendance.

Finally, it has been suggested in more recent work that females in general experience a higher college premium than men, and that this is a significant factor driving the general enrollment differential between men and women. This paper assumes that this phenomenon is no different for African Americans, considering the evidence revealing that the high college premium experienced by African Americans is largely driven by African American women. Because the college premium has already been established as a significant determinant of the general gender enrollment differential, and is expected to have similar effects on African Americans, including the college premium in the empirical analysis would not substantially add to the research concerning higher education and is therefore unnecessary for the purposes of this paper.

### A. Empirical Models

This paper uses two different econometric models to test the effects of the explanatory variables selected for analysis: an Ordinary Least Squares (OLS) multivariate regression and a binomial probit model. A multivariate regression is used to examine the linear relationship between college enrollment in a particular location and the crime rate in that same location, when controlling for income, the percentage of female-headed households, educational attainment, and unemployment. Population size and the percentage of African Americans are also included in the regression, and allow the researcher to control for the effects size may have on the results. This regression equation can be expressed as,

$$C_i = \beta_0 + \beta_1 T_i + \beta_2 A_i + \beta_3 I_i + \beta_4 F_i + \beta_5 H_i + \beta_6 U_i + \beta_7 O_i + \beta_8 S_i + \varepsilon_i \quad (1)$$

(i = 1, 2, .....n)

where  $T_i$  is the total population,  $A_i$  is the percentage of African Americans  $I_i$  is median household income,  $F_i$  is the percentage of female-headed households,  $H_i$  is the percentage of people with a high school degree,  $U_i$  is the unemployment rate,  $O_i$  is the index offense rate,  $S_i$  is a dummy variable indicating the location of a particular county (in the south or not in the south),  $\varepsilon_i$  is the stochastic error term and  $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7,$  and  $\beta_8$  are unknown partial regression coefficients. In addition to the index offense rate, which represents general crime, this paper also tests the effects of property crime and violent crime separately. Therefore two other regression lines will be used, and can be expressed as

$$C_i = \beta_0 + \beta_1 T_i + \beta_2 A_i + \beta_3 I_i + \beta_4 F_i + \beta_5 H_i + \beta_6 U_i + \beta_7 P_i + \beta_8 S_i + \varepsilon_i \quad (2)$$

(i = 1, 2, .....n)

and

$$C_i = \beta_0 + \beta_1 T_i + \beta_2 A_i + \beta_3 I_i + \beta_4 F_i + \beta_5 H_i + \beta_6 U_i + \beta_7 V_i + \beta_8 S_i + \varepsilon_i \quad (3)$$

(i = 1, 2, .....n)

where  $P_i$  and  $V_i$  represent the property crime rate and violent crime rate respectively.

Another measure of crime in addition to the ones mentioned is the incarceration rate.

Although incarceration rates at the county level are unattainable, state level incarceration rates are used in this paper as an additional source of crime measurement, and are expected to impact college enrollment in the same direction as the crime rates. While the effects of incarceration may not significantly differ from the effects of crime rates, this additional crime variable may offer some alternative methods of interpreting the empirical results. For this reason a fourth regression is used in the empirical analysis, and can be expressed as

$$C_i = \beta_0 + \beta_1 T_i + \beta_2 A_i + \beta_3 I_i + \beta_4 F_i + \beta_5 H_i + \beta_6 U_i + \beta_7 J_i + \beta_8 S_i + \varepsilon_i \quad (4)$$

(i = 1, 2, .....n)

where  $J_i$  represents the jail population or incarceration rate. Also note that this paper is examining how some of the explanatory variables may have divergent effects on the college enrollment rates of African American men and women, therefore two subscripts are needed to take these dissimilar effects into consideration. Subscripts  $m$  and  $f$  will be added to the variable  $C_i$  to represent the college enrollment rates of males and females respectively.

A binomial probit model is then used to examine the effects of the explanatory variables on the actual college enrollment differential between men and women. In the probit model the differential is the dependent variable, and is represented by a dummy variable denoted  $G_i$ . Because the dependent variable is a dummy variable, a probit model is the most appropriate estimation technique, because it avoids some of the problems

associated with a linear probability model by using a variant of the cumulative normal distribution. This model can be expressed as

$$Z_i = F^{-1}(P_i) = \beta_0 + \beta_1 T_i + \beta_2 A_i + \beta_3 I_i + \beta_4 F_i + \beta_5 H_i + \beta_6 U_i + \beta_7 O_i + \beta_8 S_i + \varepsilon_i \quad (5)$$

(i = 1, 2, …, n)

where  $P_i$  is the probability that  $G_i = 1$ , and  $F^{-1}$  is the inverse of the normal cumulative distribution function. This probit model will also test the effects of property crime, violent crime, and the incarceration rate in addition to the general crime rate, therefore the following models will also be used:

$$Z_i = F^{-1}(P_i) = \beta_0 + \beta_1 T_i + \beta_2 A_i + \beta_3 I_i + \beta_4 F_i + \beta_5 H_i + \beta_6 U_i + \beta_7 P_i + \beta_8 S_i + \varepsilon_i \quad (6)$$

i = 1, 2, …, n)

and

$$Z_i = F^{-1}(P_i) = \beta_0 + \beta_1 T_i + \beta_2 A_i + \beta_3 I_i + \beta_4 F_i + \beta_5 H_i + \beta_6 U_i + \beta_7 V_i + \beta_8 S_i + \varepsilon_i \quad (7)$$

(i = 1, 2, …, n)

and

$$Z_i = F^{-1}(P_i) = \beta_0 + \beta_1 T_i + \beta_2 A_i + \beta_3 I_i + \beta_4 F_i + \beta_5 H_i + \beta_6 U_i + \beta_7 J_i + \beta_8 S_i + \varepsilon_i \quad (8)$$

(i = 1, 2, …, n)

The variables used in both the regression and probit model will be explained in further detail in the following sections.

### *B. Dependent Variables*

The dependent variable in the regression model is college enrollment ( $C_i$ ). College enrollment in this paper is determined by dividing the number of individuals enrolled in college by the total number enrolled plus the total number not enrolled. The enrollment status of individuals from a particular county was taken from the Census

2000, which reports school enrollment by sex and age for the population three years and older. This report does not distinguish between types of school enrollment, therefore the age range is the only indicator of school level. Only individuals between the ages of 20 and 24 were used to determine the college enrollment levels of African American males and females. This age range was used because it identifies individuals who are of the appropriate age and are most likely to be enrolled in some form of post-secondary education.

The number of African Americans between the ages of eighteen and nineteen enrolled or not enrolled was categorized separately, however due to the very narrow age range it was not included in the college enrollment measurement. It may be questionable whether or not this group should be included, considering that individuals at this age are most likely to be either in the midst of their college decision-making process or in their first year of college, and therefore would reflect recent adolescent decision-making regarding the transition from high school to college. On the other, hand individuals in this age range may still be enrolled in high school. Consequently, including this group could bias results by overstating the number of adolescents actually enrolled in college. The age group used identifies individuals who are well out of the high school student range and must therefore be enrolled in some form of higher education. Again, because this Census report does not distinguish between levels of school enrollment, individuals in this age group could be enrolled in a two-year institution, a four-year institution, a graduate program, or some other form of post-secondary education. However this paper is not particularly concerned with the type of school in which individuals are enrolled, as

long as there is some indication that the level of education is higher than the secondary level.

This age group was also selected because the crime data used for this model is not taken from the year 2000, but the year 1995. In 1995 individuals in this age group were between the ages of 15 and 19, the prime time during which adolescents would be developing their preferences and preparing for college. Therefore this age group serves as a good sample of individuals who have undergone the college decision-making process and, in the face of certain environmental factors, specifically criminal activity, chose to either enroll or not enroll in some form of higher education. The crime data used for this model is explained in further detail in a later section.

As mentioned earlier, the dependent variable of a probit model is a dummy variable. In this particular probit model the dummy variable  $G_i$  represents the gender gap in college enrollment. Specifically, this dummy variable separates counties by the magnitude of the gender enrollment differential, where counties with an enrollment differential greater than four percentage points receive a value of 1, and the counties with an enrollment differential less than four percentage points receive a value of 0. The enrollment differential is measured by subtracting male college enrollment from female college enrollment.

The level of four percentage points was chosen in order to compare the effects of the explanatory variables, particularly crime, on college enrollment in counties with high gender enrollment differentials to counties with low gender enrollment differentials. The difference of four percentage points separates the top two-thirds of the counties from the bottom third based on the level of the enrollment gap. Therefore using this particular

constraint better enables the researcher to examine the effects of the explanatory variables on the dependent variable by identifying the observed counties with relatively high gender enrollment differentials.

### *C. Household Characteristics*

The two household characteristics examined in this model are median household income  $I_i$  and the percentage of female-headed households  $F_i$ . As it was mentioned earlier, household income can substantially impact an individual's response to rising tuition costs, and because it is known to affect college enrollment it is included in this regression model. The Census 2000 reports the 1999 median income of African American households in a given county. Presumably African American adolescent males and females come from the same types of households, and it is unexpected that these two groups would experience distinct outcomes in enrollment when looking specifically at household income. Consequently this variable is not expected to provide any significant explanation of the gender enrollment differential examined in this paper.

Data regarding the percentage of female-headed households was also gathered from the Census 2000, and was measured by taking the number of households consisting of one adult female with children under the age of 18, and dividing by the total number of two-or-more-person households. Previous work suggests that the children of female-headed homes are negatively affected by the instability of broken homes, therefore only single females caring for children were considered in this data set. Including female-headed households where no children are present would not make sense in a model that is examining the college enrollment of adolescents, and would only bias the percentage of

female-headed households needed for this study. The percentage of female-headed households could explain at least some of the gender enrollment gap due to findings of previous research regarding the distinct responses to family structure African American male and female adolescents each experience.

#### *D. Local Characteristics*

This paper uses the percentage of individuals 25 and older with a high school degree as a measurement of educational attainment  $H_i$ , and is reported by the Census 2000 at the county level. This percentage does not take into consideration education beyond the secondary level, and therefore does not provide an exact average for the level of educational attainment. However it does serve as a general indicator of the level of education attained by individuals living in a given area. Furthermore it can be assumed that areas with higher percentages of high school graduates will also have higher percentages of individuals with a bachelor's degree or higher, when compared to areas with lower percentages of high school graduates. Using the logic that individuals living in areas where a large proportion of the population finishes high school will be more likely to pursue higher education, this variable is predicted to have a positive effect on college enrollment for both African American males and females.

The City and County Data Book reports the unemployment rates in 2000 for all U.S. counties. The unemployment rate is measured as the civilian unemployed as a percent of the total civilian labor force. Neither the unemployment rate nor the percentage of high school graduates were reported by race, however both variables are considered to accurately reflect the local environment in which adolescents make their

decisions regarding college, and are therefore expected to have some impact on the enrollment rates of African American male and female adolescents as they would for adolescents belonging to other racial groups.

Other local characteristics included in the data set are the total county population size and the percentage of African Americans in each county. These variables are intended to control for population size of both the general population as well as for African American specifically. However these two variables are not of primary concern for the purposes of this paper, and therefore will receive very little attention in the discussion of the empirical results.

#### *E. Crime Data*

Crime data was taken from the FBI crime reports provided by the Bureau of Justice Statistics. The index offense rate  $O_i$  used in equations (1) and (5) is measured as the number of criminal offenses reported per 100,000 population. The index offense rate can be divided into two categories, property crime ( $P_i$ ) and violent crime ( $V_i$ ). Property crime includes burglary, larceny-theft, and motor vehicle theft, while violent crime includes murder, forcible rape, robbery, and aggravated assault. This data set uses crime rates from 1995 because, as mentioned earlier, adolescents begin forming their decisions related to college preparation early during their adolescence. Therefore if criminal activity is believed to affect enrollment rates by providing certain individuals with an alternative to college, using crime rates from some point earlier than the year in which college enrollment is being observed should reflect the role of criminal activity in the

adolescent decision-making process. The year 1995 was selected because it was the median year of the most recent decade.<sup>10</sup>

Local agencies including city police and county sheriff departments voluntarily submit citizen reports of criminal activity to the FBI. Because the rates depend solely on the number of crimes reported by citizens, this data does not necessarily reflect the actual number of crimes taking place in a given area. Due to underreporting, the FBI crime reports are known to often provide biased and slightly inaccurate estimates of the level of crime in a particular area. However, while these reports do not provide exact numbers, they do provide some indication of the level of crime in a particular area, and are therefore reliable sources of comparison when examining the crime rates of different counties.

State level incarceration rates provide an additional source of crime data by reporting the number of individuals per 100,000 who are incarcerated each year. This data was retrieved from the 1996 Correctional Populations in the United States, also reported by the Bureau of Justice Statistics. Incarceration rates from this source are reported by race (black and white), therefore the number of blacks incarcerated per 100,000 black residents is used in this data set. The incarceration rate could potentially have a negative effect on college enrollment simply because individuals that are in prison are unable to attend college. Furthermore, the likelihood of attending college once out of prison may be greatly reduced compared to the likelihood of attending college straight from high school. If this is the case then states with relatively high incarceration rates would be expected to have lower levels college enrollment, and would most likely have a

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<sup>10</sup> The Bureau of Justice Statistics does not report crime rates for every county. Crime statistics for smaller counties were obtained from the City and County Data Book. Crime statistics taken from this source

relatively high gender enrollment differential given the greater proportion of men in prison compared to women.

#### *F. County Selection*

Data was collected for a total of 73 counties, which serve as the observations for the two models used in the empirical analysis. Counties were selected based on the percentage of African Americans living in the particular county. Examining counties with substantial proportions of African Americans provides a more representative sample of African Americans, thereby allowing for more variation in the values of the variables being examined. A percentage of 15% was chosen as the benchmark for determining which counties had substantial proportions of African American.<sup>11</sup> In the sample of counties chosen, included were the top 25 counties with the largest African American populations, as well as the 25 counties with the largest percentage of African Americans, both of which were ranked the City and County Data Book. The sample also included counties that were part of metropolitan areas as well as rural areas. As mentioned earlier, one of the purposes of this paper is to examine differences in the enrollment gap across various regions. Therefore including a mixture of large metropolitan counties as well as small rural counties was critical to the focus of this study. In addition to having substantial variation in county size, there is also substantial geographic location variation, with nearly all of the geographic regions represented in the sample.

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were from the year 1999, as the year 1995 was unavailable.

<sup>11</sup> The only county included in the observations that did not have an African American percentage of at least 15% was Los Angeles County, CA. This county is only 10% African American, however it is a county with one of the largest African American populations in the country. Given the substantial size of the African American population in this county, examining this county was thought to be worthwhile and therefore was included as an observation.

## V. Empirical Results

The means and standard deviations of the dependent and explanatory variables are listed in Table 1. Consistent with the recently reported trends regarding college enrollment among African Americans, the summary results reveal that the average proportion of African American females enrolled in college in 2000 was higher than the average proportion of African American males enrolled. An average of 32.2% of the 20 to 24 year old African American females in the sample counties were enrolled in college compared to an average of only 26.9% for 20 to 24 year old African American males. Across counties the average difference between female and male enrollment was approximately 5.3 percentage points.

As indicated by the standard deviations, the variables for this particular sample ranged from having variations as small as 12% of the mean, to having very high variations at around 177% of the mean. Variables exhibiting little variation include the percentage of female-headed households as well as the percentage of individuals with a high school degree. Variables with high variations include total population, the percentage of African Americans, the violent crime rate, and the gender enrollment differential. Given the observations of the data set, these variables were expected to exhibit substantial variation, and it is through this variation that the effects of certain explanatory variables will most likely be detected. For example, counties ranging from 9000 people to over 9 million people are included in this data set, and given the evidence linking city size to crime, larger counties are more likely to exhibit higher crime rates and therefore larger enrollment differentials, if the hypothesis of this paper holds true. In order to test the validity of this paper's hypothesis it was critical to include observations

that exhibit a certain amount of variation so that the researcher is able to distinguish the effects of the variables being tested from one set of observations to the next.

*Table 1 – Means and Standard Deviations*

<b>Variables</b>	<b>Mean</b>	<b>Standard Deviation</b>
Male Enrollment	0.269	0.115
Female Enrollment	0.322	0.114
Enrollment Differential	0.053	0.056
Index Offense Rate	5834.774	3560.226
Property Crime Rate	4616.653	2868.816
Violent Crime Rate	915.881	837.976
Incarceration Rate	1465.945	786.239
Total County Population	777766.1	1374918
Percent African American	0.451	0.218
Percent Female-Headed Households	0.274	0.046
Median Household Income	26177.18	9359.516
Unemployment Rate	6.151	3.935
Percent with High School Degree	0.744	0.091

#### *A. Regression Results*

Table 2 lists the results from regression equation (1) for both African American males and females, using the index offense rate as the main crime regressor. For this regression, as well as the remaining models that will be used in this paper, robust standard errors were generated in order to solve the problem of heteroskedasticity that may exist in this sample. Because this research uses cross-sectional county data, there is a high chance that the variance of the error term is not constant, but is being affected by the large differentials between the observed variable values of each observation.

Therefore the standard errors listed in the following tables are robust standard errors.

The signs of the coefficients of most of the explanatory variables run consistent with theoretical predictions of the impact each variable would have on college enrollment. For both regressions median household income and the percentage of

female-headed households have negative coefficients, implying that both variables are deterrent factors of college enrollment for African American males and females. The coefficient of the unemployment rate has a positive coefficient, suggesting that an increase in the unemployment rate would lead to an increase in college enrollment, the outcome predicted by the human capital model. While the signs of these coefficients are consistent with theoretical predictions, the actual values of these coefficients are close to zero, and none show signs of statistical significance. Using a t-distribution to test for statistical significance, with 64 degrees of freedom and a significance level of 5%, the explanatory variables mentioned have t-statistics of less than 2.000, and therefore are not considered statistical significant.

The percentage of individuals with a high school degree was the only variable of particular interest to exhibit both a coefficient of the predicted sign as well as statistical significance. For both African American males and females the percentage of individuals with a high school degree had a positive effect on college enrollment, suggesting that the educational attainment of a particular area has an impact on the likelihood that individuals living in the area will attend college. For African American males the coefficient of this variable is lower than the coefficient for African American females, however the differential is quite small. In general the results of this regression indicate that all of the explanatory variables have similar effects on both African American males and females, regardless of whether the results are significant or insignificant.

The index offense rate was of primary interest for the purposes of this paper, as it was expected to have a significantly negative impact on college enrollment in general, and specifically on the college enrollment of African American men, thereby driving the

gender gap in enrollment. However the results of this regression do not support the theory that predicts such an outcome. Not only is the index offense rate statistically insignificant, with a t-statistic of 1.11 for men and 1.38 for women, it also has a positive coefficient that is very close to zero. These results suggest that the index offense rate has practically no effect on the college enrollment of African American men or women, which is inconsistent with the theoretical framework outlined previously and the hypothesis of this paper.

**Table 2 – Regression (1) Results**

	Male Enrollment	Female Enrollment
Constant	-0.474 (0.317)	-0.467 (0.314)
Total Population	$1.92 \times 10^{-8}$ ( $1.01 \times 10^{-8}$ )	$2.23 \times 10^{-8}$ ( $9.46 \times 10^{-9}$ )
Percent African American	0.127 (0.174)	0.151 (0.149)
Median Household Income	$-2.38 \times 10^{-6}$ ( $1.98 \times 10^{-6}$ )	$-2.83 \times 10^{-6}$ ( $1.91 \times 10^{-6}$ )
Percent Female-Headed Households	-0.193 (0.286)	-0.239 (0.320)
Unemployment Rate	0.010 (0.008)	0.007 (0.007)
Index Offense Rate	$3.70 \times 10^{-6}$ ( $3.34 \times 10^{-6}$ )	$4.27 \times 10^{-6}$ ( $3.09 \times 10^{-6}$ )
Percent With High School Degree	0.946 (0.375)	1.04 (0.367)
South Dummy	0.004 (0.024)	0.01 (0.025)
R <sup>2</sup>	.01568	.2260

Table 3 lists the results of regression (2), using property crime as the main crime regressor. As shown in the table, the results from this regression are not much different from the results of regression (1). Median household income, the percentage of female-headed households, and the unemployment rate all yielded coefficients of the predicted sign, but were not statistically significant. Similar to the index offense rate, the property

crime rate exhibited a positive coefficient that was close to zero and was statistically insignificant. The percentage with a high school degree exhibited both the anticipated coefficient sign and statistical significance. The coefficient and t-statistic of this variable were higher for the African American female enrollment, but only slightly. The results of regression (3), using violent crime as the main crime regressor, were consistent with the results of regressions (1) and (2), and did not yield results significant enough to support this paper's hypothesis. Results from regression (3) are listed in Table 4.

**Table 3 – Regression (2) Results**

	<b>Male Enrollment</b>	<b>Female Enrollment</b>
Constant	-0.441 (0.320)	-0.437 (0.312)
Total Population	$1.95 \times 10^{-8}$ ( $1.02 \times 10^{-8}$ )	$2.19 \times 10^{-8}$ ( $9.53 \times 10^{-9}$ )
Percent African American	0.130 (0.175)	0.146 (0.150)
Median Household Income	$-2.31 \times 10^{-6}$ ( $1.97 \times 10^{-6}$ )	$-2.83 \times 10^{-6}$ ( $1.91 \times 10^{-6}$ )
Percent Female-Headed Households	-0.186 (0.287)	-0.244 (0.326)
Unemployment Rate	0.009 (0.008)	0.007 (0.007)
Property Crime Rate	$3.31 \times 10^{-6}$ ( $4.57 \times 10^{-6}$ )	$5.73 \times 10^{-6}$ ( $4.25 \times 10^{-6}$ )
Percent With High School Degree	0.910 (0.381)	0.998 (0.366)
South Dummy	0.001 (0.023)	0.010 (0.024)
R <sup>2</sup>	.1517	.2266

**Table 4 – Regression (3) Results**

	Male Enrollment	Female Enrollment
Constant	-0.452 (0.324)	-0.457 (0.317)
Total Population	$1.97 \times 10^{-8}$ ( $1.06 \times 10^{-8}$ )	$2.21 \times 10^{-8}$ ( $9.84 \times 10^{-9}$ )
Percent African American	0.137 (0.177)	0.158 (0.151)
Median Household Income	$-2.14 \times 10^{-6}$ ( $2.04 \times 10^{-6}$ )	$-2.52 \times 10^{-6}$ ( $1.94 \times 10^{-6}$ )
Percent Female-Headed Households	-0.155 (0.284)	-0.189 (0.316)
Unemployment Rate	0.008 (0.008)	0.006 (0.007)
Violent Crime Rate	$7.11 \times 10^{-6}$ ( $1.50 \times 10^{-5}$ )	( $1.26 \times 10^{-5}$ ) ( $1.36 \times 10^{-5}$ )
Percent With High School Degree	0.918 (0.382)	1.013 (0.368)
South Dummy	0.003 (0.028)	0.013 (0.028)
R <sup>2</sup>	.1488	.2183

Regression (4) yielded slightly different results regarding the impact of the crime variable on college enrollment compared to the other three regressions. Again, median household income, the percentage of female-headed households, and unemployment had coefficients of the expected sign but were statistically insignificant. The percentage of individuals with a high school degree was the most statistically significant explanatory variable, consistent with the results of the other regressions. However, in contrast to the other regressions, the incarceration rate showed a negative coefficient, which was the predicted sign of the crime variable coefficients. Furthermore, the estimate coefficient was nearly statistically significant for African American females, having a t-statistic with an absolute value of 1.91. Although the incarceration rate coefficient was also negative

for African American males, it was not estimate as precisely. These results are inconsistent with the hypothesis of this paper, which suggests that such crime variables would have a more negative and significant effect on African American males as opposed to females. These results show the opposite of what was expected, and are listed in Table 5.

**Table 5 – Regression (4) Results**

	Male Enrollment	Female Enrollment
Constant	-0.429 (0.322)	-0.415 (0.309)
Total Population	$2.14 \times 10^{-8}$ ( $9.55 \times 10^{-9}$ )	$2.51 \times 10^{-8}$ ( $9.18 \times 10^{-9}$ )
Percent African American	0.138 (0.168)	0.162 (0.143)
Median Household Income	$2.28 \times 10^{-6}$ ( $1.99 \times 10^{-6}$ )	$2.76 \times 10^{-6}$ ( $1.90 \times 10^{-6}$ )
Percent Female-Headed Households	-0.113 (0.277)	-0.123 (0.296)
Unemployment Rate	0.008 (0.008)	0.004 (0.007)
Incarceration Rate	$1.24 \times 10^{-5}$ ( $8.44 \times 10^{-6}$ )	$1.99 \times 10^{-5}$ ( $1.04 \times 10^{-5}$ )
Percent With High School Degree	0.921 (0.384)	1.016 (0.366)
South Dummy	-0.00726 (0.023)	-0.004 (0.024)
R <sup>2</sup>	.1531	.2284

There are several explanations for the inconsistent and insignificant results of the regression analysis. It is possible that the relationship between crime and college enrollment is not perfectly linear. Perhaps the results retrieved from these particular observations reflect a flatter portion of the curve representing the relationship between college enrollment and crime, and for this reason the regression results yield coefficients close to zero. Furthermore the dataset used may lack the variation needed to yield more significant results. Although using cross-sectional data at the county level does provide a

certain amount of variation in the values of the variables, and counties from distinct geographical regions were intentionally chosen to provide such variation, the limited number of observations used in the regression models restricts the precision with which coefficients are estimated. Using averaged county data can potentially wash away the variation that would show more significant results. Furthermore using a small number of observations generates very large standard errors, which can also lead to imprecise measurements of the coefficients of the variables. Therefore, rather than assume from the results that there is no relationship between crime and college enrollment, it is more reasonable to assume that statistical imprecision is the most plausible explanation for the inconsistency of the results.

#### *B. Probit Model Results*

Due to the limited variation within the sample used in the empirical analysis, crime may not appear to have the negative effect on college enrollment that is hypothesized in this paper. However, in light of the fact that variation is limited, this may mean that in order to effectively examine the effects of crime on college enrollment it is necessary to broaden the scope of analysis, by comparing counties with small gender enrollment gaps to counties with large gender enrollment gaps. This not only provides a more practical method of analysis for a dataset that lacks significant variation, but also specifically addresses the gender enrollment differential as opposed to the general enrollment patterns of African American males and females. Therefore a binomial probit model, instead of a linear regression model, may better suit the goals of this paper, which primarily focus on providing explanation for the African American gender differential in college enrollment.

Table 6 provides a summary of the crime rates and college enrollment rates for all of the counties used as observations. In the table the county sample is roughly divided into thirds, based on the index offense rates of each county. The first group of counties consists of those counties with index offense rates greater than or equal to 7000. The second group contains counties with index offense rates greater than or equal to 4000 but less than 7000. Finally, the third group consists of counties with index offense rates less than 4000. The numerical constraints of 4000 and 7000 were chosen in order to divide the sample into thirds, in order to compare counties with high crime, medium crime and low crime, and then examine the size of the college enrollment gender gap of the counties in each subgroup.

**Table 6 – Crime and College Enrollment Rates by County**

County	Index Offense Rate	Enrollment Differential
East Baton Rouge Parish, LA	7329.7	5.8
Orleans Parish, LA	10960.9	11.8
Jefferson Parish, LA	8470.2	7.6
Prince George's County, MD	7934.1	6.3
Baltimore City, MD	13318	6.6
Humphreys County, MS	10206	-0.8
Sunflower County, MS	10663	-2.0
Cook County, IL	9747.5	6.1
Los Angeles, CA	7680	7.1
Philadelphia County, PA	7070.4	5.3
Duval County, FL	7107	4.2
Miami-Dade County, FL	11911.4	5.5
Washington D.C.	12166.4	5.7
Richmond City, VA	10330.2	11.2
Norfolk City, VA	8448.4	13.1
Petersburg IC, VA	7113.1	-1.5
Milwaukee, WI	8462.9	3.9
Wayne County, MI	11938.8	4.7
Harris County, TX	7588	5.2
Dallas County, TX	9464.1	0.7
Dekalb County, GA	9461.2	11.0
Essex County, NJ	15511.9	5.3
Boston City, MA	9492.8	5.2

County	Index Offense Rate	Enrollment Differential
St. Louis, MO	16082.9	8.5
Shelby County, TN	5265.2	6.4
Charleston County, SC	4791.4	7.6
Richland County, SC	4853.3	4.5
Spartanburg County, SC	6306.7	0.6
Bronx County, NY	6032.2	10.0
New York County, NY	6032.2	6.9
Kings County, NY	6032.2	7.4
Queens County, NY	6032.2	7.7
Broward County, FL	6301.2	5.2
Escambia County, FL	6102.8	0.8
Leon County, FL	4398.5	6.2
Chatham County, GA	5239.6	13.1
Clayton County, GA	6484	12.0
Richmond County, GA	4569	12.8
Sumter County, AL	5014	5.9
Jefferson County, AL	4446.7	6.2
Macon County, AL	5138	-2.5
Leflore County, MS	5964	7.0
Cumberland County, NC	5678.2	8.8
Charles County, MD	4901.4	0.8
Baltimore County, MD	6404.8	4.5
Henrico County, VA	4093.8	3.2
Marion County, IN	4994.2	3.1
Alameda County, CA	4010	1.8
Forsyth County, NC	3375.2	8.0
Guilford County, NC	3818.9	11.3
Hamilton County, OH	3632	3.0
Cuyahoga County, OH	3506.6	3.4
Bullock County, AL	682	1.4
Lowndes County, AL	2224	-5.5
Wilcox County, AL	483	11.8
Mobile County, AL	2564.5	7.9
Perry County, AL	1150	12.3
Greene County, AL	3175	2.5
Allendale County, SC	3945	3.0
Williamsburg County, SC	2521.8	2.7
Houston County, GA	3948.9	7.7
Bibb County, GA	3408.3	13.1
Fulton County, GA	3129.3	1.9
Hancock County, GA	1106	13.3
East Carroll, LA	2536	-5.7
Rapides Parish, LA	3273	10.9
Lake County, IN	1404.9	7.0
Tunica County, MS	470	1.8

County	Index Offense Rate	Enrollment Differential
Jefferson County, MS	135	22.2
Claiborne County, MS	1725	-3.0
Coahoma County, MS	2796	-4.3
Holmes County, MS	826	-15.8
New Castle County, DE	2557.6	2.8

Of the counties with relatively high general crime rates, nearly 80% had gender enrollment differentials greater than four percentage points. The average enrollment gap among these counties was 5.7 percentage points. Of the counties with medium index offense rates, approximately 70% had gender enrollment differentials greater than four percentage points, with an average enrollment gap of 5.8 percentage points. The counties with low crime rates had an average enrollment gap of 4.5 percentage points, while only 44% of the counties in this subgroup had enrollment differentials greater than four percentage points. Table 6 suggests that there is at least some type of linkage between crime and the gender enrollment differential, as a large proportion of the counties with high and medium crime rates have enrollment differentials greater than four percentage points. It is also clear from this table that the crime rate does make a difference, in terms of its impact on the gender enrollment differential, when comparing counties with medium to high crime rates to counties with low crime rates. It must be noted however that Table 5 only provides a very general overview of the findings on crime and college enrollment. These findings do not automatically imply that the crime rate is the only factor causing the high enrollment differential. There may be other factors that are not only affecting the enrollment differential, but are also affecting crime, creating the illusion that there is a direct relationship between crime and college enrollment, when in fact it is the impact of a third variable that is generating this spurious relationship between crime and the enrollment differential. To examine whether or not crime has a

significant impact on the gender differential, it is necessary to review the results of the probit models testing the index offense rate, the property crime rate, the violent crime rate, and the incarceration rate.

The results of probit test (5), using the index offense rate as the main crime variable, are reported in Table 7. For all the probit models used in the empirical analysis, results were calculated using the `dprobit` command as opposed to the `probit` command, in order to more easily interpret and convey the results of the model. Instead of calculating the change in the dependent variable caused by a one-percent change in the explanatory variables, the `dprobit` command calculates the slope of the probability function. This particular model is examining the probability that the dummy variable, representing a gender enrollment differential greater than four percentage points, equals 1. Therefore the results of all the probit models list  $dF/dx$  for each explanatory variable instead of estimated coefficients, where  $dF/dx$  is the discrete change of the dummy variable from 0 to 1.

Many of the results from probit test (5) were similar to those of the regression analysis. Median household income, the percentage of female-headed households and unemployment all exhibit signs of  $dF/dx$  that correspond to the signs of their coefficients from the regression analysis. However, the interpretation of these signs is quite different from the regression analysis, given that the dependent variable has changed from college enrollment to a dummy variable representing a gender enrollment differential greater than four percentage points. Median household income and the percentage of female headed households both exhibit a negative  $dF/dx$ , suggesting that these two factors are not causing a change in the dummy variable from a low enrollment differential (0) to a high

enrollment differential (1). The sign of median household income is consistent with the predictions of this paper as well as the assumptions of previous work, which suggest that median household income would not distinctly affect African American males and females, and therefore would not be a determinant of the gender enrollment differential. However, based on the psychology-based theoretical framework used in this paper, the percentage of female-headed households was expected to have at least some effect on the enrollment differential, yet the negative slope of this variable does not support this prediction. Although the estimated slopes of both median household income and the percentage of female-headed households were found to be statistically insignificant, it is worthwhile to address the discrepancy between the actual results and the expected outcome based on theory. Again, the lack of variation due to the limited number of observations could explain some of the discrepancy in results. Many of the counties in the sample had similar percentages of female-headed households with very little deviation, as seen earlier in Table 1. This could be the reason for the lack of precision in measuring the slope of this variable, and explain why the results did not meet expectations.

The unemployment rate exhibited a positive slope sign, suggesting that this variable may have an effect on the gender enrollment differential. Like median household income and the percentage of female-headed households, the estimated slope of unemployment was not found to be statistically significant. Nevertheless the sign of the slope of this variable should be discussed, in order to provide at least some explanation for its possible effect on the gender gap in college enrollment. It could be argued that the positive slope of the variable, which suggests that high unemployment

increases the probability that a county will have a high enrollment differential, is not consistent with what the human capital theory would predict given the effects of unemployment on African American men specifically. Although African Americans as a whole experience higher unemployment compared to other racial groups, substantial evidence reveals that African American men are even more affected by high unemployment than their female counterparts. If it is true that the relatively high unemployment rate experienced by African Americans is largely driven by African American men, then the college enrollment rates of such men in areas where unemployment is high should also be high, because according to human capital theory, weak labor markets should drive college enrollment rates upwards. Therefore unemployment should not necessarily have a negative impact on the enrollment differential, and should in fact help close the gap.

To respond to this argument it is helpful to revert back to previous literature. Certain studies (Black and Sufi, 2002) have provided evidence revealing that, unlike Caucasian Americans, African Americans do not seem to respond appropriately to a weak job market by enrolling in college. While low SES African Americans do respond to increasing direct costs by decreasing enrollment, they do not in turn respond to decreasing opportunity costs caused by high unemployment by increasing enrollment. This is a possible explanation for the impact unemployment seems to have on the enrollment differential. Perhaps African American men are responding perversely to unemployment and not enrolling in college, while African American women are responding appropriately, which is then driving the enrollment gap between African American men and their female counterparts. Furthermore, as suggested by the

theoretical framework discussed in this paper, college enrollment may not be the only alternative to labor market participation. If there exists a weak labor market in a particular area, individuals living in that area can turn engage in criminal activity as an alternative or complementary activity to the labor market. Therefore the effects of unemployment on the enrollment differential could be in some way related to criminal activity, which leads to the discussion of the crime rate and its effect on the enrollment differential.

The index offense rate was the most significant explanatory variable, with a z value of 2.29. The change in probability of the dependent variable, indicated by a positive  $dF/dx$ , suggests that the index crime offense has an impact on the change in the dependent dummy variable from 0 to 1. In other words, the general crime rate seems to have a strong impact on whether or not there is a small enrollment gap or a large enrollment gap between African American men and women. In addition to crime, the percentage of individuals with a high school degree also impacted the change in the probability that the enrollment differential was greater than four percentage points. Although the actual probability change caused by this variable was higher than the change caused by the index offense rate, statistically the estimated change was close to significant with a z value of 1.86, but not as significant as the crime rate.

### 7 – Probit Test (5) Results

		Gender Gap ( $G_i > 0.4$ )
Total Population		$1.51 \times 10^{-7}$
		$(1.13 \times 10^{-7})$
Percent African American		0.195
		(0.509)
Median Household Income		$-5.84 \times 10^{-6}$
		$(8.18 \times 10^{-6})$
Percent Female-Headed Households		-0.265
		(1.31)
Unemployment		0.022
		(0.027)
Index Offense Rate		$4.31 \times 10^{-5}$
		$(1.95 \times 10^{-5})$
Percent with High School Degree		2.42
		(1.32)
South Dummy		0.150
		(0.178)
Observed P		0.644
Predicted P		0.682
Wald $\chi^2$ (8)		12.73

The results of probit (6), testing property crime as the main crime variable, are similar to the results of probit test (5), and are listed in Table 8. All of the explanatory variables, with the exception of property crime, exhibit similar probability changes in both value and direction, as well as a similar range of significance. Like the general crime rate, the property crime rate is the only statistically significant explanatory variable, with a z value of 2.76. In addition to having a higher z value in comparison to the index crime rate, the property crime rate also exhibits a larger change in probability, with a  $dF/dx$  of  $7.23 \times 10^{-5}$  compared to the index offense rate value of  $4.31 \times 10^{-5}$ .

**Table 8 – Probit Test (6) Results**

		<b>Gender Gap (<math>G_i &gt; 0.4</math>)</b>
Total Population		$1.19 \times 10^{-7}$
		$(9.76 \times 10^{-8})$
Percent African American		0.059
		(0.532)
Median Household Income		$5.88 \times 10^{-6}$
		$(8.21 \times 10^{-6})$
Percent Female-Headed Households		-0.412
		(1.39)
Unemployment		0.029
		(0.028)
Property Crime Rate		$7.23 \times 10^{-5}$
		$(2.65 \times 10^{-5})$
Percent with High School Degree		1.98
		(1.31)
South Dummy		0.153
		(0.187)
Observed P		0.644
Predicted P		0.684
Wald $\chi^2$ (8)		15.16

The results of probit test (7) differ only slightly from the previous two probit tests, in that the percentage of female-headed households variable exhibits a positive coefficient, suggesting that in this particular model, using violent crime as the main crime variable, this variable has an impact on the enrollment gap. Although the estimated  $dF/dx$  of this variable is statistically insignificant, it is interesting that the direction of the impact of this variable changes when violent crime is introduced to the model. Previous research (Kelly, 2000) has provided substantial evidence that identifies the percentage of female-headed households as the most important single predictor of violent crime specifically. This strong linkage between the two variables could explain why the percentage of female-headed households seems to have an effect on the enrollment differential when violent crime is added as an explanatory variable. The effect of violent

crime on the enrollment differential is statistically more significant than the estimated effect of both the general crime rate and property crime rate, however the magnitude by which the violent crime rate was able to change in the enrollment differential from small to large was lower than the other two measures of crime. The results of probit test (7) are listed in Table 9 below.

The size of the coefficients of the three crime variables show that the property crime rate seems that have the most impact in changing the gender enrollment gap from small (0) to large (1). This finding is consistent with the theoretical framework presented in this paper, which outlines the decision between participating in crime or enrolling in college as a choice between two potential economic returns. If it is assumed that property crime yields more economic returns than violent crime, then the resulting large impact property crime has on the gender gap supports this framework.

**Table 9 – Probit Test (7) Results**

		<b>Gender Gap (<math>G_1 &gt; 0.4</math>)</b>
Total Population		$1.04 \times 10^{-7}$
		$(1.10 \times 10^{-7})$
Percent African American		0.183
		(0.520)
Median Household Income		$2.45 \times 10^{-6}$
		$(7.93 \times 10^{-6})$
Percent Female-Headed Households		0.465
		(1.255)
Unemployment		0.025
		(0.027)
Index Offense Rate		$2.927 \times 10^{-4}$
		$(1.031 \times 10^{-4})$
Percent with High School Degree		2.527
		(1.277)
South Dummy		0.260
		(0.189)
Observed P		0.644
Predicted P		0.69
Wald $\chi^2$ (8)		16.56

The final probit test uses the incarceration rate as the main crime regressor. The results of this test are slightly different from the results of probit (7), and are listed in Table 10. The most interesting change worth noting is the effect of the incarceration rate on the enrollment differential. The probit test using the other three measurements of crime suggested that they each had a positive effect on the enrollment gap, essentially implying that crime had a more negative effect on the enrollment of African American men and a positive effect on African American women. However, the incarceration rate does not yield similar results, and in fact seems to be effecting the enrollment gap in the opposite direction, suggesting that it was not affecting the enrollment differential. The estimated effect of the incarceration rate is nearly significant, with an absolute value  $z$  value of 1.90.

## **VI. Conclusion**

Using a multivariate regression model to examine the effects of crime on college enrollment did not prove to be the ideal method of empirical analysis. All of the crime measurements failed to meet expectations based on the hypothesis and theoretical framework of this paper. In the regression analysis, the only variable to have a significant impact on college enrollment was the percentage of individuals with a high school degree, from both an economic and statistical standpoint. The coefficients for the male and female regression were slightly different for this variable, showing a larger effect for women compared to men. This result was somewhat consistent with the results of the probit test, which revealed that the percentage of individuals with a high school degree was one of the factors driving the gender gap. These findings suggest that local

educational attainment, specifically high school degree attainment, seems to increase the likelihood of college enrollment more so for African American women than for African American men. A possible explanation for this is that African American women are exhibiting lower dropout rates, and not only graduating from high school, but also graduating with more stellar credentials compared to African American men.

The results of the probit analysis yielded results that were more consistent with the theory discussed, and supported the hypothesis presented in this paper. All three reported crime rates were shown to have a significant impact the enrollment gap being small or large. Property crime had the largest and most statistically significant result, while violent crime had the smallest impact on the gender gap, compared to both property crime and general crime. The incarceration rate did not yield significant results in this model, which is consistent with the argument of Jacob (2002), who suggested that the incarceration rate was not the reason for the gender enrollment gap. This paper agrees with Jacob, in the sense that it does not consider the gender enrollment gap among African Americans to be largely driven by the fact that the large proportion of African American men in jail are simply unable to attend college. The main contention of this paper is that increased criminal participation over the past three decades has affected the decisions of adolescent African American males and females. Increased returns to crime, low economic success, and the psychological effects associated with family instability are factors affecting the enrollment decisions of African American men. Not to mention the effects of peer and social group membership, social conformity, and the stigma of “acting

white” that can often be associated with academic achievement, which are also playing a role in the behavior of African American male adolescents.<sup>12</sup>

The decisions of African American women may have also transformed over recent decades, specifically in response to the behavior of their male counterparts. The possibility of being single and being the sole income-earner are the harsh realities African American women now face. The fact that single parenting has become almost the norm for African American households, African American women have dramatically changed their decisions regarding college enrollment. The interaction of these opposing forces, pulling African American men downward and pushing African American women upward, is clearly one of the factors driving the trends we observe today.

Although this paper has provided some insight into the growing gender gap between African American men and women, the contributions made are not enough to explain in depth what is truly occurring within the African American community. The scope of this paper’s analysis was limited, and there are several recommendations to be made in order to encourage and facilitate future research. This paper did not examine whether or not crime has distinct effects on 4-year enrollment vs. 2-year enrollment, or if it even has an effect on graduate level enrollment, which is also experiencing a growing gender gap. In retrospect, a more specific recommendation that could have possibly enhanced the results of this paper would have been the use of individual data as opposed to aggregated data. Resources such as the NELS and NLSY may have provided more insight into the actual decision-making process of adolescents, by going into detail regarding their preferences, goals, etc. Using individual data may be particularly helpful when trying to establish an economic relationship between two factors that is not

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<sup>12</sup> See Akerlof (1997), *Econometrica* for further discussion of social decisions and conformity.

completely economic in nature. Individual datasets allow for more social factors to be significantly seen, which for a topic like this could not only enhance the results but also allow for more interpretation.

The economic and social implications of the growing gender gap among African Americans can be substantially stifling to the progress of African Americans as a racial group. However the consequences of this gap extend beyond the confines of race, and could potentially have a very large negative impact on society as a whole. If the enrollment rate of African American men continues to decline, while the incarceration rate continues to rise, American society could severely be affected by a large drain on the economy, as the labor force participation rate continues to dwindle for this group.

Of course the economic consequences of the recent trends in higher education and crime are much more acute within the African American community. It has been found that the college premium for African Americans is very high, and that African Americans who earn at least a bachelor's degree can increase their income by nearly 109% (The Journal of Blacks in Higher Education, 1999). Given the large economic benefit African Americans can experience from enrolling in college, the fact that a decreasing proportion of African American men are able to take advantage of this college premium will have a significant impact on the economic success of this group. Although the enrollment rate of African American women is increasing, they are also indirectly affected by this gap. From both economic and social standpoints the growing gender gap can have a significant impact on the African American family. Single African American females who are unable to find mates with comparable levels of education will experience a tight squeeze on household income, significantly affecting the economic functioning of the

family. Furthermore recent trends have shown that interracial marriage rates between an African American female and Caucasian male have been increasing (Newsweek, March 2003). Considering the marriage rate of this type of couple was very low in previous years, this may be the result of the dearth of suitable African American men available for marriage, and could have severe social implications for the future. For all of the reasons mentioned the African American gender gap is an interesting topic of study, and extended research is imperative to the effectiveness of public policies which are geared towards encouraging college attendance among African Americans.

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